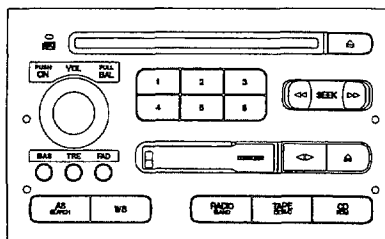


Service Manual

PIONEER®
The Art of Entertainment
SAAB



ORDER NO.
CRT1904

HEAD UNIT(3 in 1)

FX-M2116ZSA UC

COMPACT
disc
DIGITAL AUDIO

VEHICLE	DESTINATION	PRODUCED AFTER	PART No.	PIONEER MODEL No.
SAAB9000	U.S.A., CANADA	1997	4616876	FX-M2116ZSA/UC

NOTE:

- See the service manual CX-597(CRT1811) for the CD mechanism description, disassembly and circuit description.
- The CD mechanism employed in this model is one of CX-844 series.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
- See the separate manual CX-631(CRT1640) for the cassette mechanism description.
- The cassette mechanism assy employed in this model is one of X-2L series
- How to cancel the security system for service.

To cancel the security function, turn on the back-up power while pressing the Tape eject button and the Power button (Volume knob) at the same time. To re-activate the security system, turnoff the power (or the back-up power).

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1. SAFETY INFORMATION

● CD Player Service Precautions

1. For pickup unit(CXX1230) handling, please refer to "Disassembly"(CX-597 Service Manual CRT1811).
During replacement, handling precautions shall be taken to prevent an electrostatic discharge(protection by a short pin).

2. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

2.2 EXTERIOR

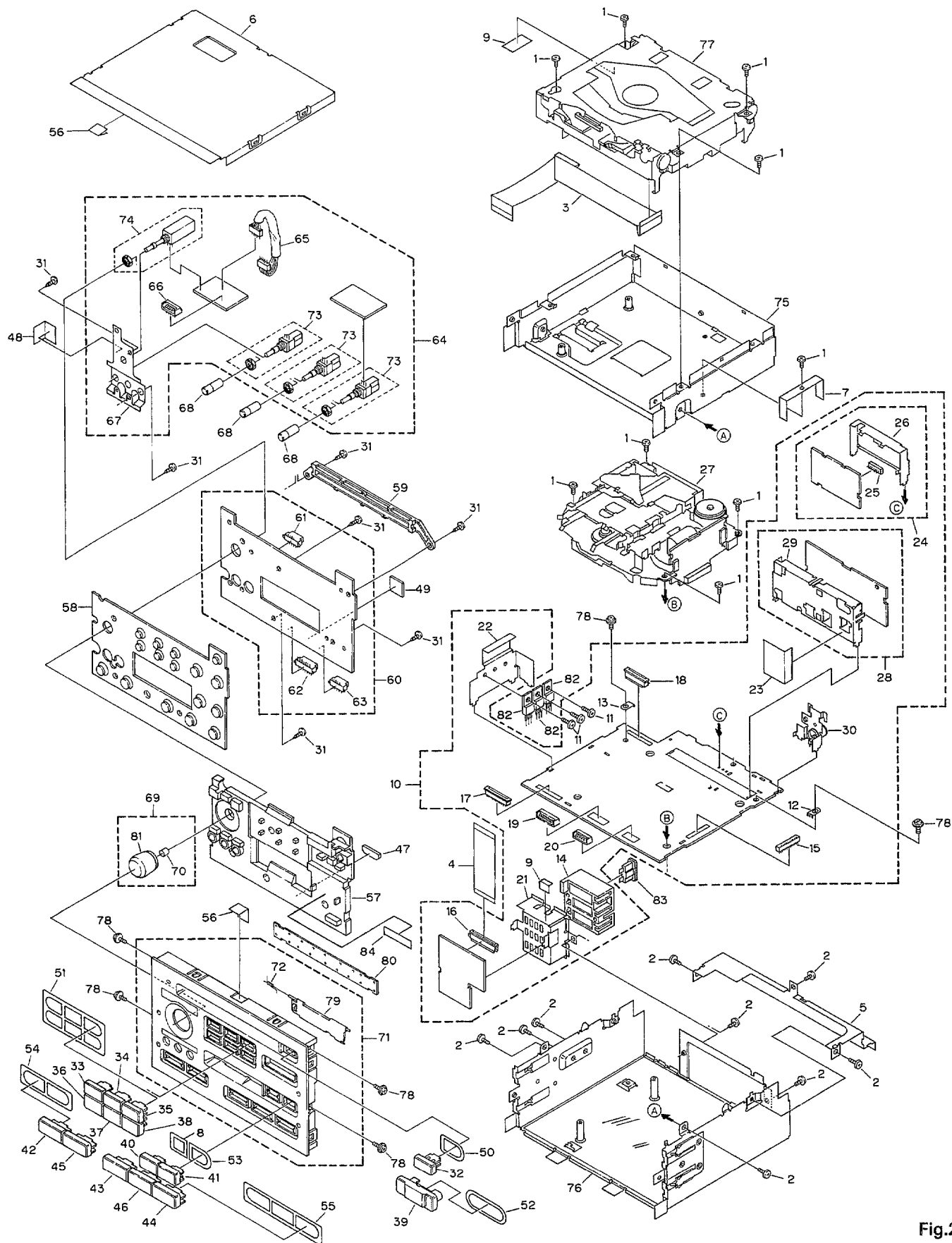


Fig.2

NOTES:

● Parts marked by “*” are generally unavailable because they are not in our Master Spare Parts List.

Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BMZ26P050FMC	46	Button(TAPE)	CAC4744
2	Screw	BMZ30P050FMC	47	Spacer	CNM4949
3	Connector	CDE4930	48	Spacer	CNM4982
4	Connector	CDE4952	49	Spacer	CNM4983
5	Case	CNB1958	50	Insulator	CNM5135
6	Case	CNB1959	51	Insulator	CNM5136
7	Holder	CNC5985	52	Insulator	CNM5137
8	Insulator	CNM5298	53	Insulator	CNM5297
9	Insulator	CNM5000	54	Insulator	CNM5139
10	Tuner Mother Unit	CWM4354	55	Insulator	CNM5140
11	Screw	BMZ30P060FMC	56	Insulator	CNM5247
12	Terminal(CN803)	CKF1059	57	Lighting Conductor	CNV4220
13	Terminal(CN804)	CKF1059	58	Rubber	CNV4222
14	Connector(CN851)	CKM1088	59	Holder	CNV4535
15	Connector(CN651)	CKS1730	60	Key Board Unit	CWM4355
16	Connector(CN852)	CKS1963	61	Connector(CN903)	CKS3340
17	Connector(CN701)	CKS2255	62	Connector(CN901)	CKS3341
18	Connector(CN801)	CKS2774	63	Connector(CN902)	CKS3341
19	Connector(CN601)	CKS2830	64	Volume Unit	CWM4511
20	Connector(CN602)	CKS2830	65	Cord(CN904)	CDE4761
21	Holder	CNC5906	66	Connector(CN905)	CKS2829
22	Holder	CNC5986	67	Holder	CNC6818
* 23	Insulator	CNM4912	68	Knob Assy	CXA7840
24	WB Unit	CWE1396	69	Knob Assy	CXA7839
25	Plug(CN9)	CKS1616	70	Spring	CBL-108
* 26	Case	CNC3854	71	Grille Unit	CXA8888
27	Cassette Mechanism Module	EXK3215	72	Spring	CBH1371
28	Tuner Unit	CWE1422	73	Volume(VR902,903,904)	CCS1089
29	Holder	CNC6122	74	Volume(VR901)	CSD1031
30	Antenna Unit(CN501)	CXA9328	75	Chassis Unit	CXA7830
31	Screw	BPZ26P100FMC	76	Chassis Unit	CXA7831
32	Button(⊕)	CAC4365	77	CD Mechanism Module(S7)	CXK5022
33	Button(1)	CAC4366	78	Screw	IMS30P050FMC
34	Button(2)	CAC4367	* 79	Door	CAT1768
35	Button(3)	CAC4368	* 80	Cover	CNM4768
36	Button(4)	CAC4369	* 81	Knob	CAA1383
37	Button(5)	CAC4370	82	Transistor(Q802,815,818)	2SB1185
38	Button(6)	CAC4371	83	Fuse(FU851)	CEK1005
39	Button(SEEK)	CAC4372	84	Film	CNM5299
40	Button(◀▶)	CAC4373			
41	Button(⊕)	CAC4374			
42	Button(AS)	CAC4375			
43	Button(RADIO)	CAC4377			
44	Button(CD)	CAC4379			
45	Button(WB)	CAC4464			

2.3 CD MECHANISM MODULE

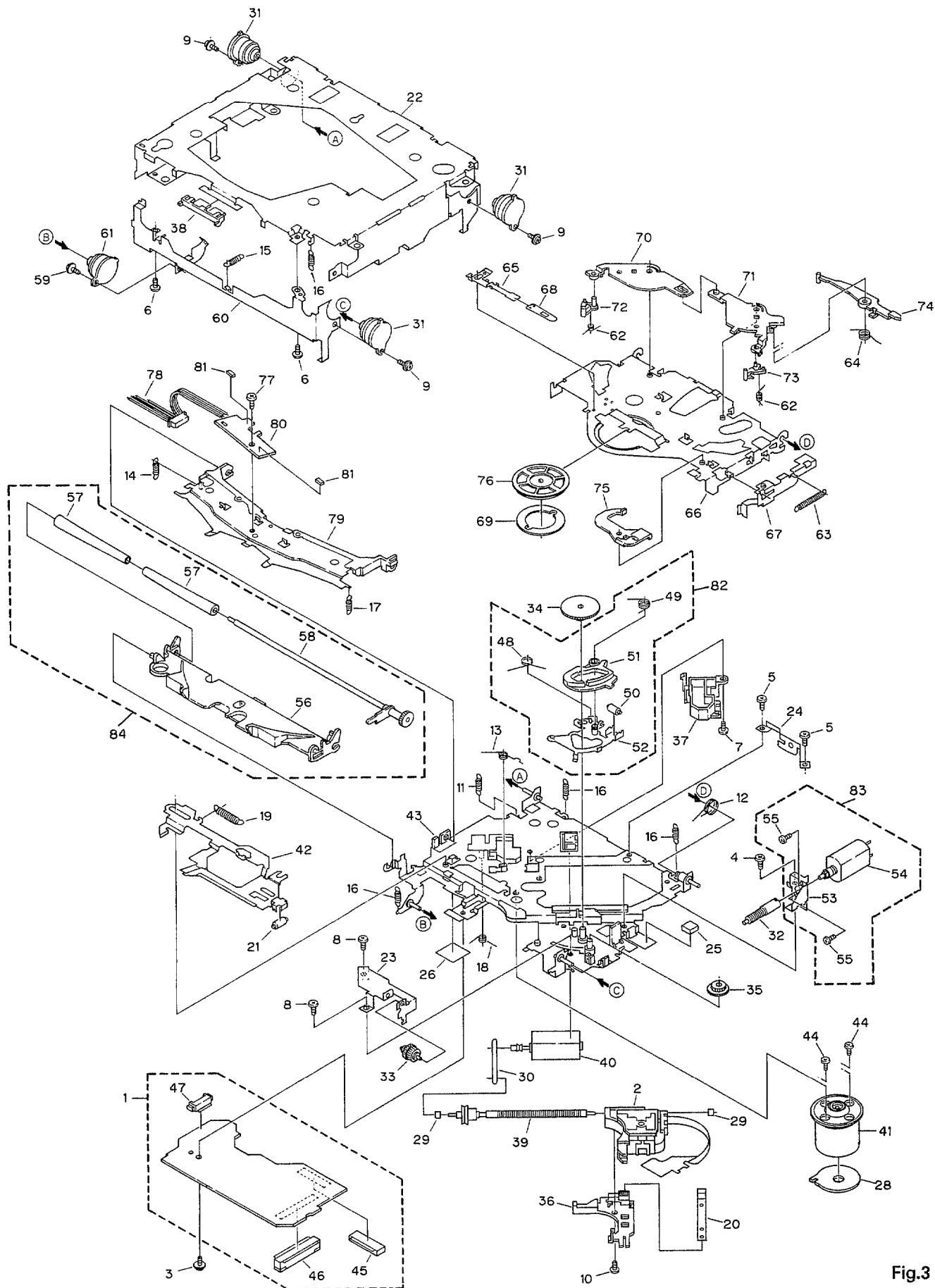


Fig.3

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Control Unit	CWX2096	46	Connector(CN701)	CKS2774
2	Pickup Unit(Service)	CXX1230	47	Connector(CN801)	CKS2196
3	Screw	IMS26P035FMC	48	Spring	CBH1832
4	Screw	BMZ20P025FMC	49	Spring	CBH1833
5	Screw	BMZ20P040FMC	50	Roller	CLA2627
6	Screw	BSZ20P040FMC	51	Arm	CNV4136
7	Screw(M2×3)	CBA1077	52	Arm Unit	CXA8565
8	Screw(M2×2)	CBA1250	53	Bracket	CNC6056
9	Screw(M2×5)	CBA1296	54	Load Motor Unit(M3)	CXA8702
10	Screw(M2×3.85)	CBA1362	55	Screw	JFZ20P025FMC
11	Spring	CBH1724	56	Arm	CNV4120
12	Spring	CBH1729	57	Roller	CNV4509
13	Spring	CBH1730	58	Gear Unit	CXA8701
14	Spring	CBH1731	59	Screw(M2×5)	CBA1296
15	Spring	CBH1732	60	Frame	CNC5797
16	Spring	CBH1745	61	Damper	CNV3974
17	Spring	CBH1848	62	Spring	CBH1736
18	Spring	CBH1849	63	Spring	CBH1863
19	Spring	CBH1939	64	Spring	CBH1945
20	Spring	CBL1214	65	Spring	CBL1269
21	Roller	CLA2627	66	Arm	CNC5799
22	Frame	CNC5796	67	Lever	CNC6054
23	Bracket	CNC5871	68	Spacer	CNM3315
* 24	Bracket	CNC6376	69	Sheet	CNM4849
25	Cushion	CNM3917	70	Arm	CNV4122
26	Sheet	CNM4873	71	Arm	CNV4123
27			72	Arm	CNV4124
28	PCB	CNP4230	73	Arm	CNV4125
29	Bearing	CNR1415	74	Arm	CNV4138
30	Belt	CNT1071	75	Arm	CNV4139
31	Damper	CNV3974	76	Clamper	CNV4140
32	Gear	CNV4128	77	Screw(M2×2)	CBA1250
33	Gear	CNV4129	78	Connector(CN1)	CDE4576
34	Gear	CNV4857	79	Arm	CNC5801
35	Gear	CNV4131	* 80	Gathering PCB	CNX2445
36	Holder	CNV4663	81	Photo-transistor(Q1, 2)	CPT-230S-X
37	Holder	CNV4664	82	Elbow Arm Assy	CXA8889
38	Guide	CNV4484	83	Load Motor Assy	CXA8891
39	Screw Unit	CXA8699	84	LO Arm Assy	CXA8892
40	CRG Motor Unit(M2)	CXA8986			
41	Motor Unit(M1)	CXA8912			
42	Lever Unit	CXA9300			
43	Chassis Unit	CXA9515			
44	Screw	JFZ20P025FMC			
45	Connector(CN101)	CKS1953			

2.4 CASSETTE MECHANISM MODULE

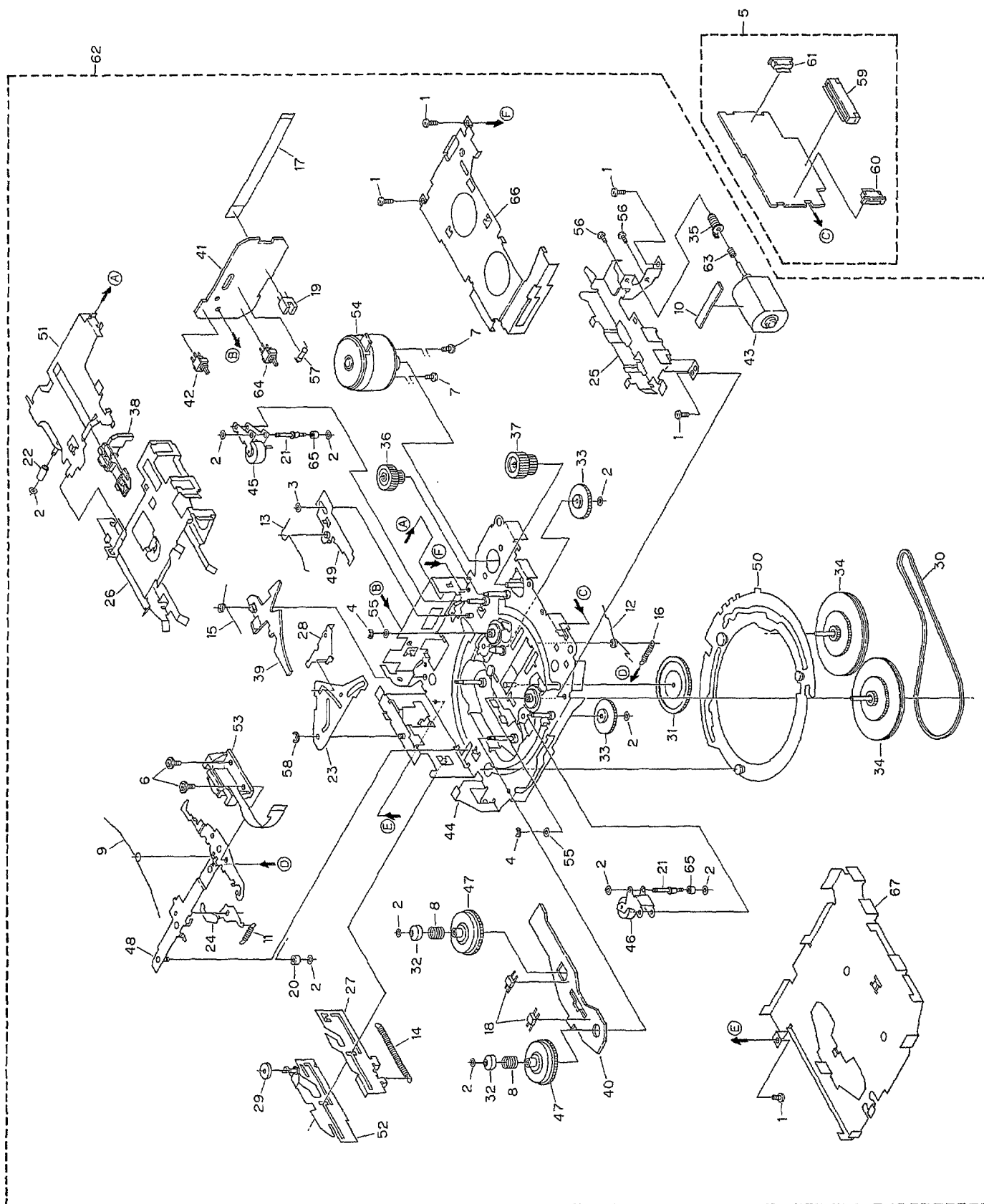


Fig.4

● Parts List

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Screw	BSZ20P040FMC	36	Worm Wheel	ENV1440
2	Washer	CBF1037	37	Gear	ENR1028
3	Washer	CBF1038	38	Lever	ENV1442
4	Washer	CBG1003	39	Arm	ENV1445
5	Deck Unit	CWM4528	40	Gathering P.C.Board	ENX1029
6	Screw	EBA1028	41	Gathering P.C.Board	ENX1030
7	Screw	EBA1037	42	Switch(S1)	ESG1004
8	Spring	EBH1531	43	Motor Unit(M2)	EXA1382
9	Spring	EBH1589	44	Chassis Unit	EXA1495
10	Cushion	ENM1034	45	Pinch Roller Unit	EXA1384
11	Spring	EBH1515	46	Pinch Roller Unit	EXA1385
12	Spring	EBH1587	47	Reel Unit	EXA1423
13	Spring	EBH1517	48	Head Base Unit	EXA1434
14	Spring	EBH1518	49	Lever Unit	EXA1438
15	Spring	EBH1519	50	Gear Unit	EXA1436
16	Spring	EBH1537	51	Frame Unit	EXA1476
17	Cord	EDD1015	52	Lever Unit	EXA1439
18	Photo-reflector(EGN2,3)	EGN1004	53	Head Assy(HD1)	EXA1488
19	Photo-interrupter(EGN1)	EGN1005	54	Motor Unit(M1)	EXA1381
20	Roller	ENR1031	55	Washer	HBF-179
21	Shaft	ELA1362	56	Screw	JGZ20P025FNI
22	Roller	ELA1348	57	Resistor(R1)	RD1/4HM181J
23	Arm	ENC1396	58	Washer	YE20FUC
24	Arm	ENC1397	59	Connector(CN251)	CKS1711
25	Guide	ENC1398	60	Connector(CN252)	CKS2127
26	Holder	ENC1417	61	Connector(CN253)	CKS2129
27	Lever	ENC1448	62	Spare Unit	EXA3020
28	Arm	ENC1401	63	Spring	EBH1545
29	Roller	ENR1027	64	Switch(S2)	ESG1004
30	Belt	ENT1027	65	Roller	ENR1023
31	Gear	ENV1347	66	Cover	ENC1412
32	Collar	ENV1508	67	Cover	ENC1413
33	Gear	ENV1350			
34	Flywheel	ENV1410			
35	Worm Gear	ENV1439			

3. SCHEMATIC DIAGRAM

● Level Diagram

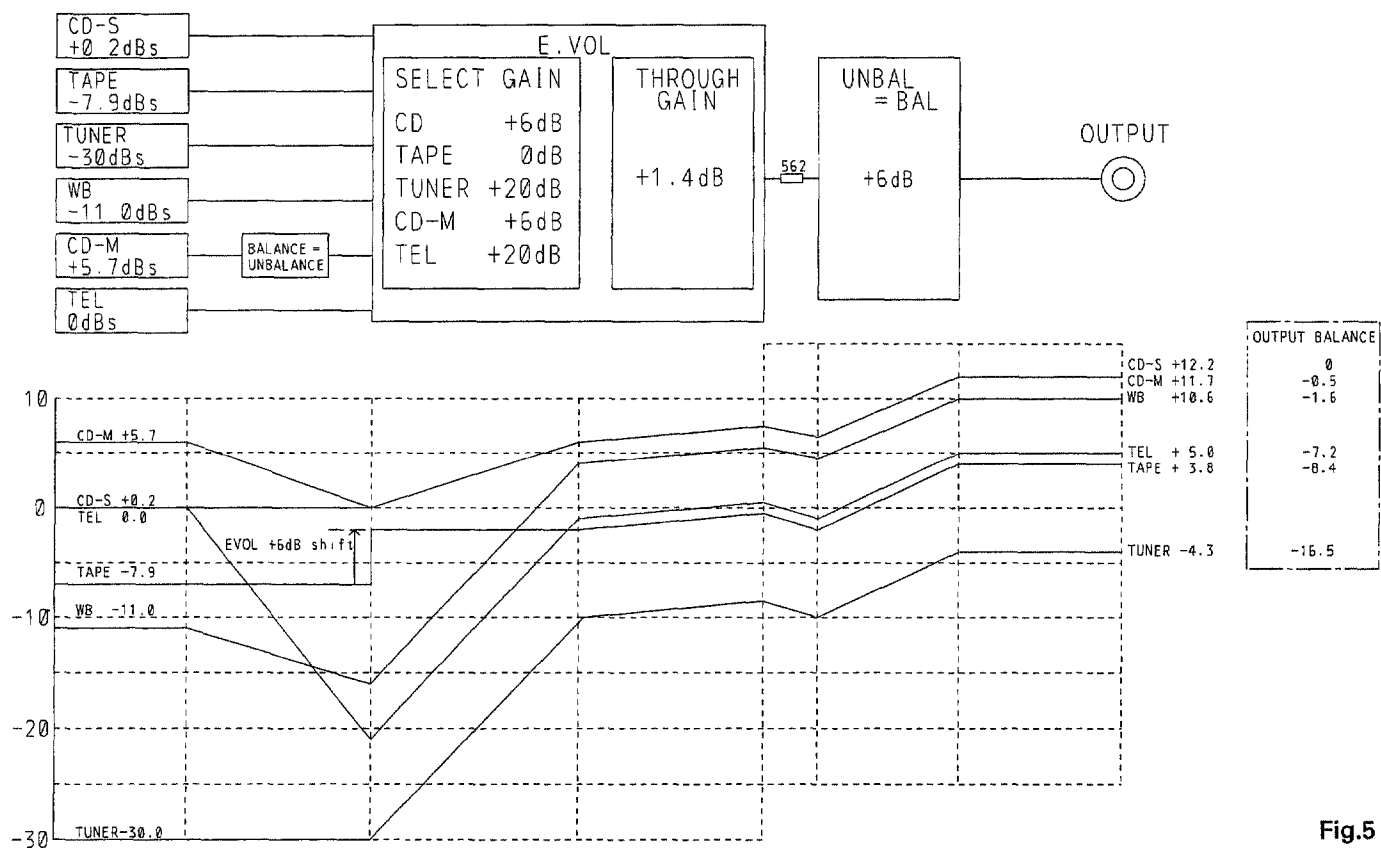


Fig.5

3.1 OVERALL CONNECTION DIAGRAM

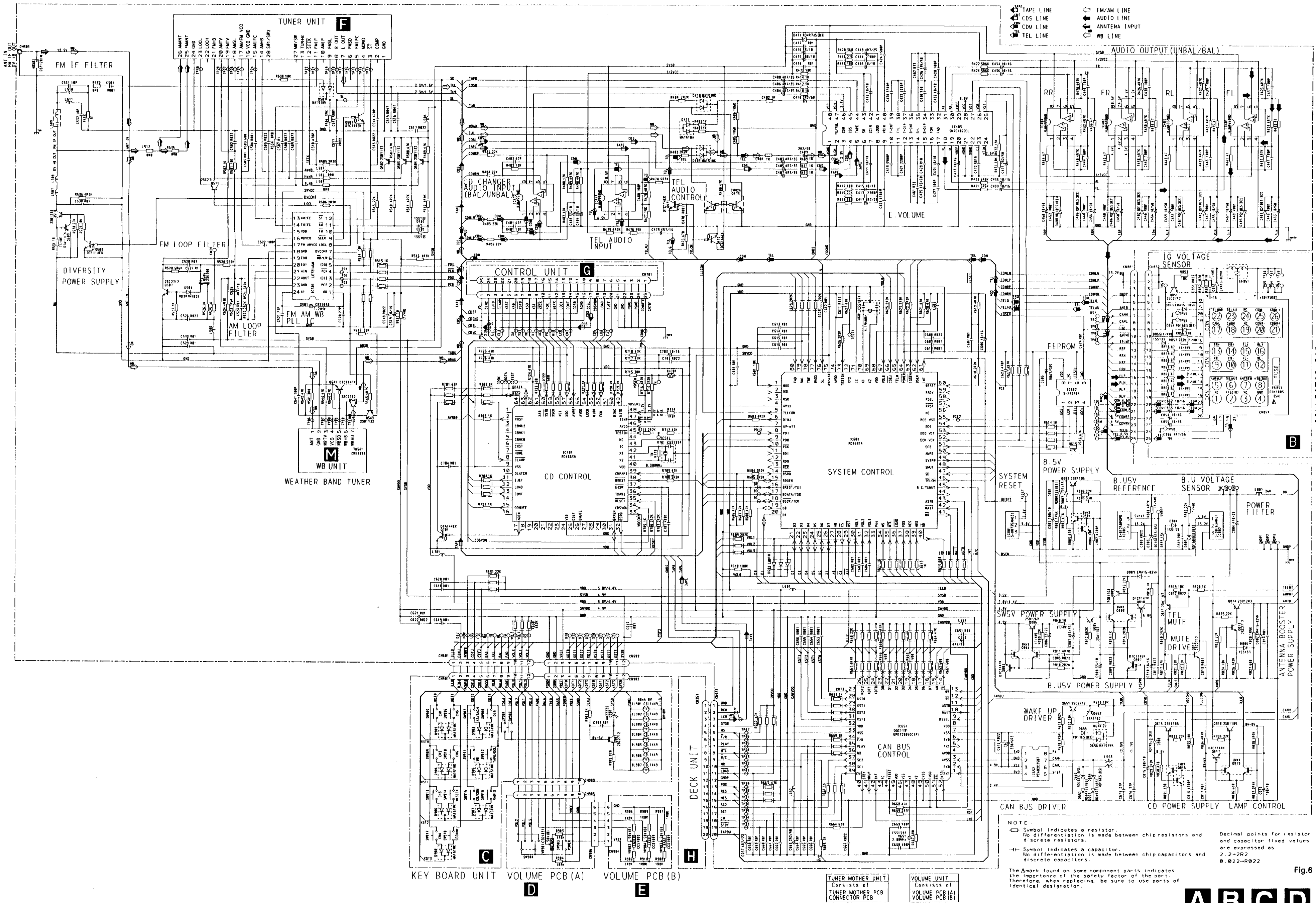
TUNER MOTHER PCB **A**

Fig.6

A B C D E

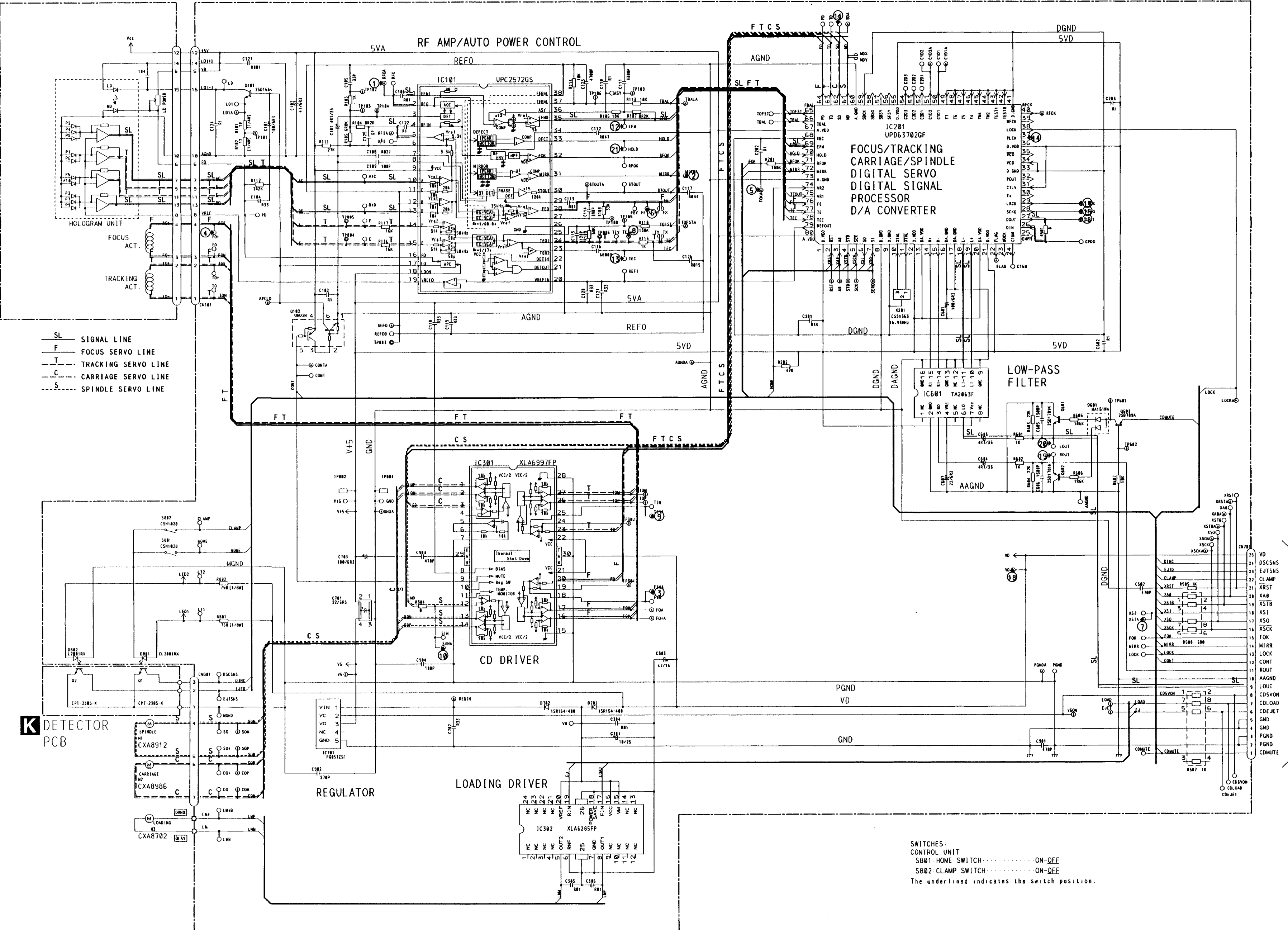
3.2 CD MECHANISM MODULE

A

B

PICKUP UNIT (SERVICE)
(CXX1230)

CONTROL UNIT **G**



A CN701

Fig.7

3.3 TUNER UNIT

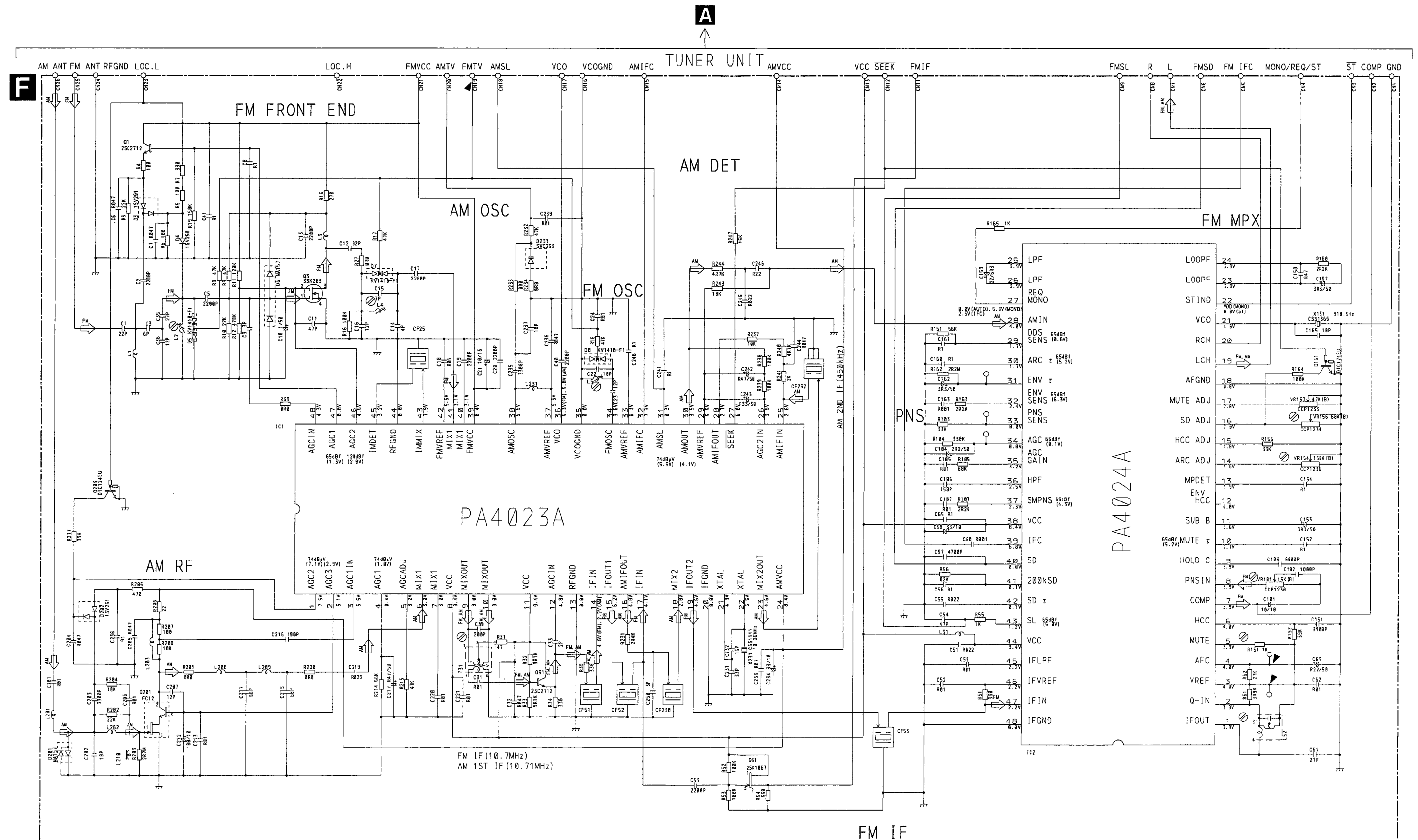


Fig.8

3.4 CASSETTE MECHANISM MODULE

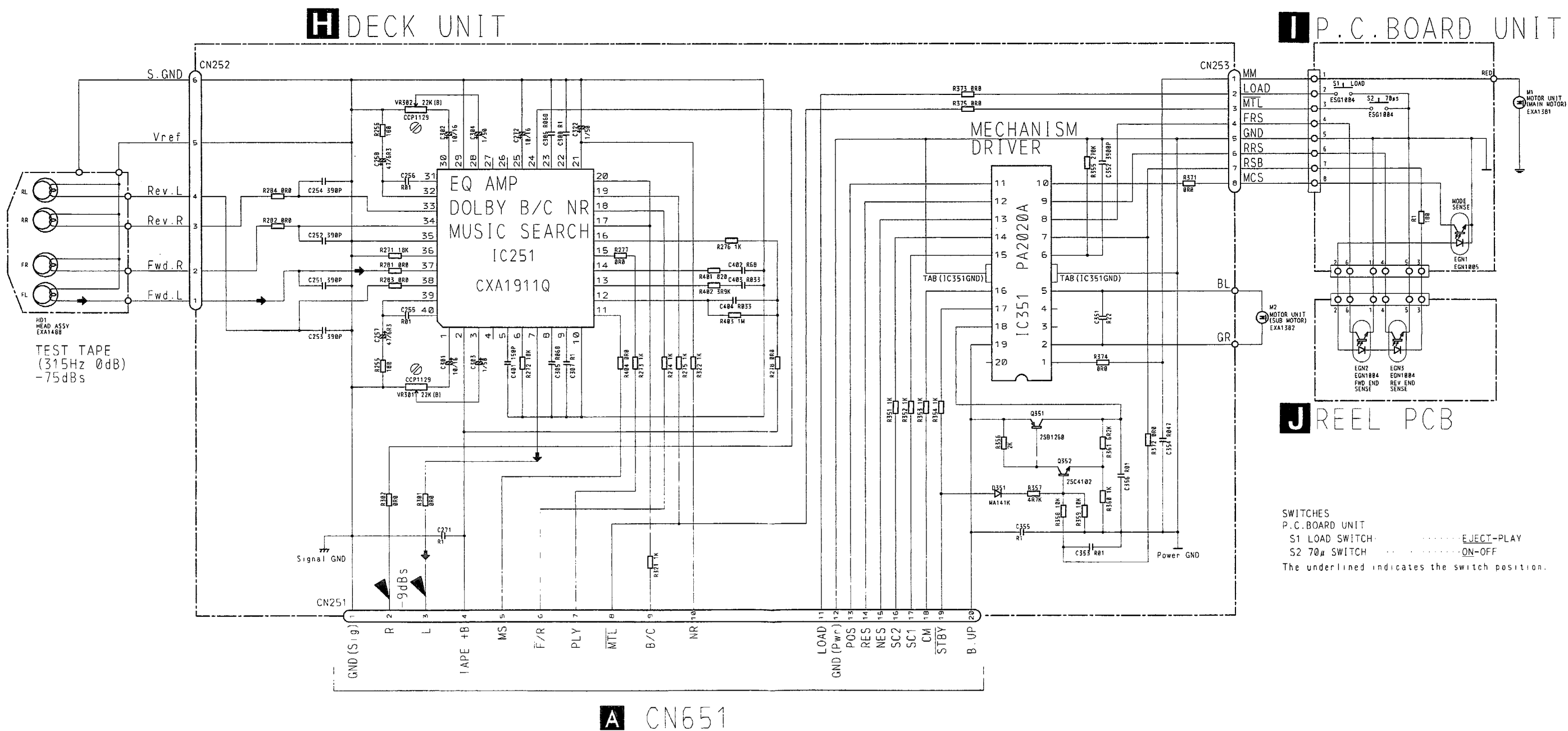


Fig.9

3.5 WB UNIT

4. PCB CONNECTION DIAGRAM

4.1 WB UNIT

WB UNIT **M**

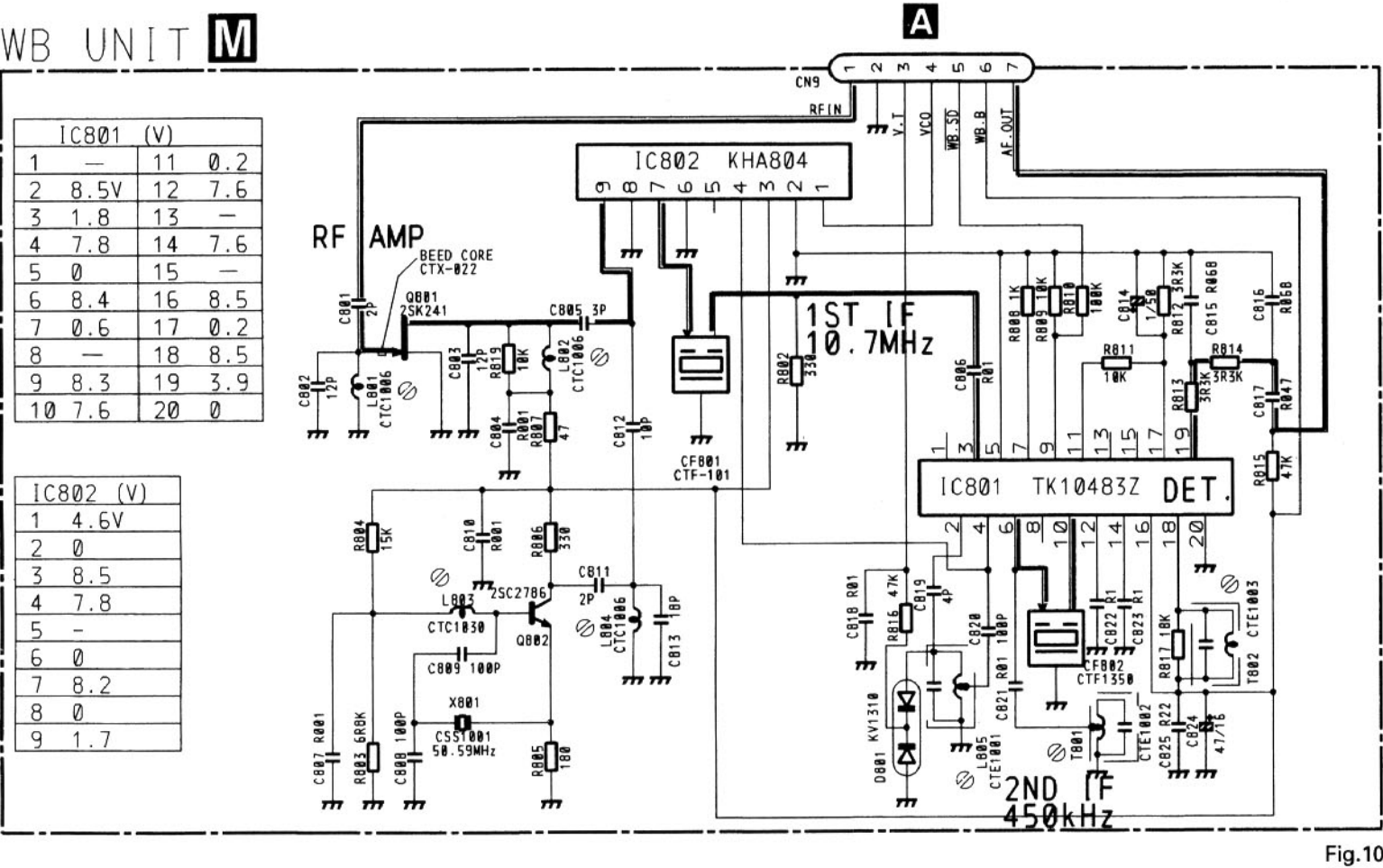


Fig.10

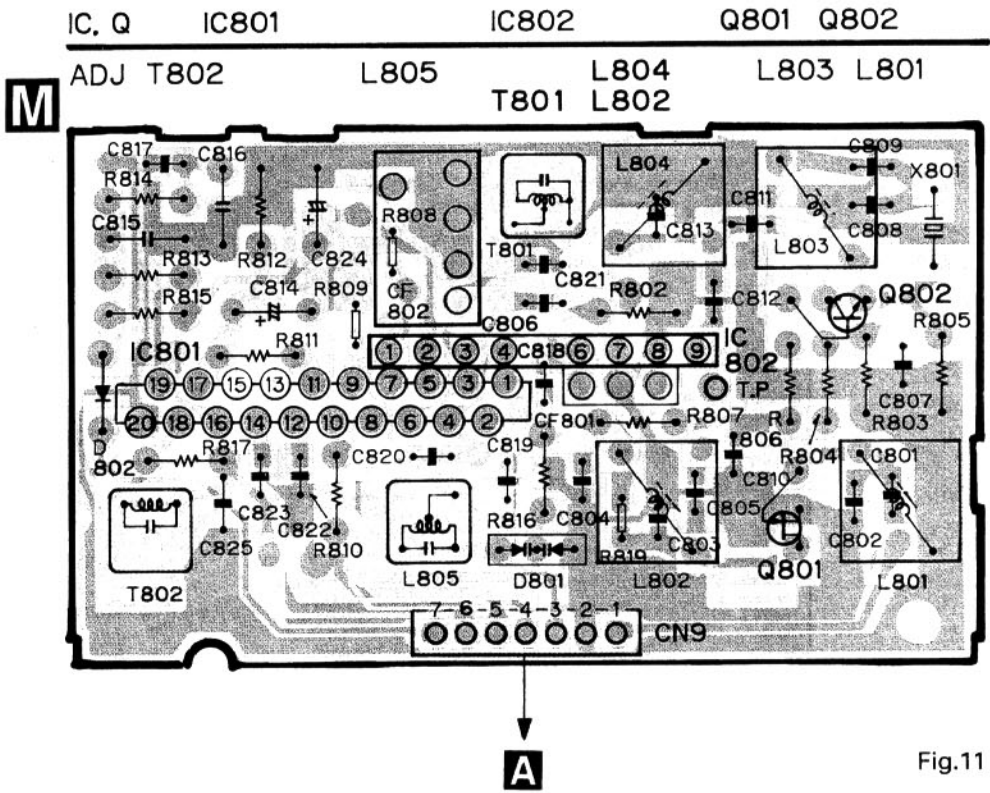


Fig.11

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

4.2 TUNER MOTHER PCB

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

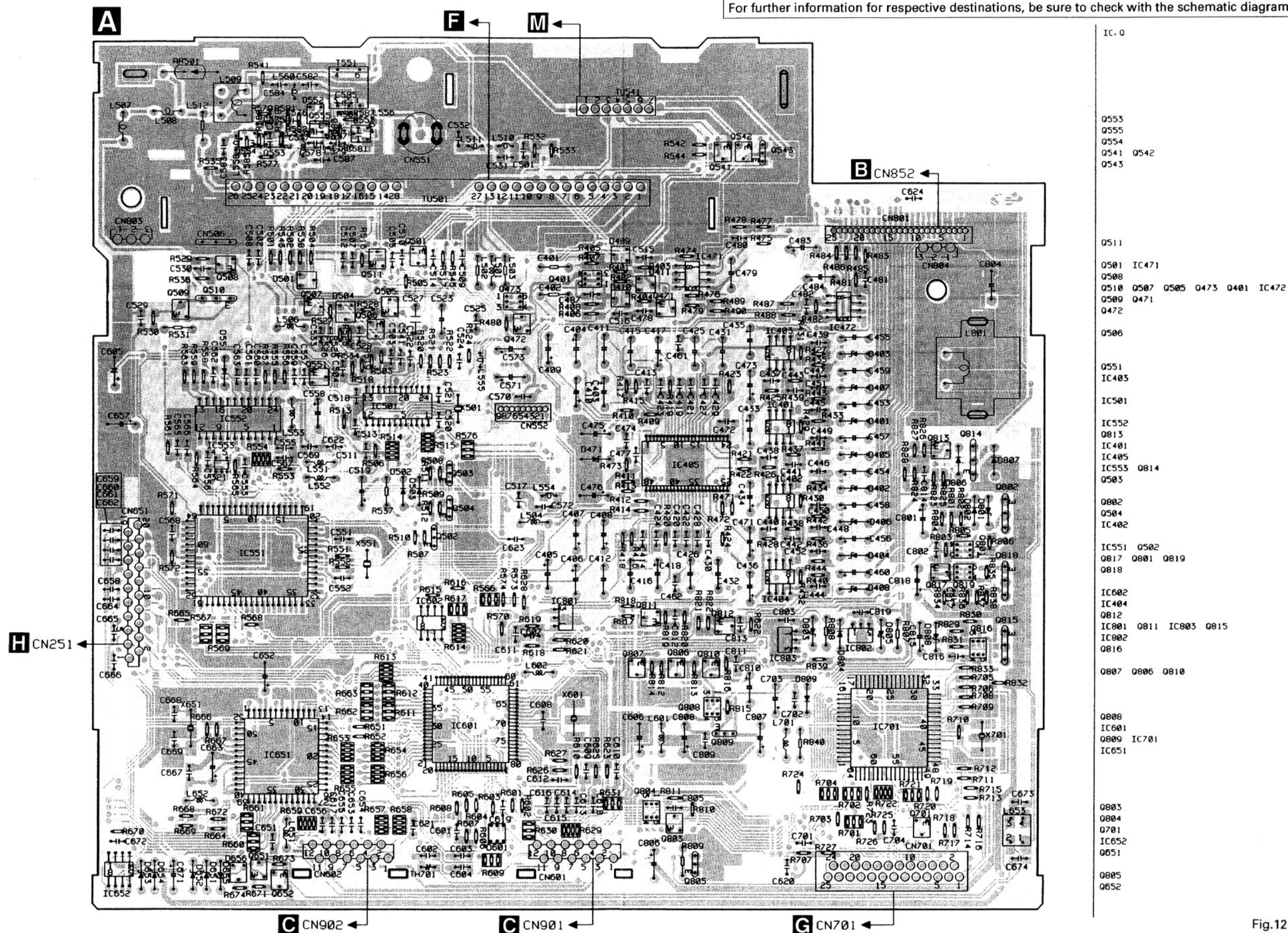


Fig.12

4.3 KEY BOARD UNIT

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

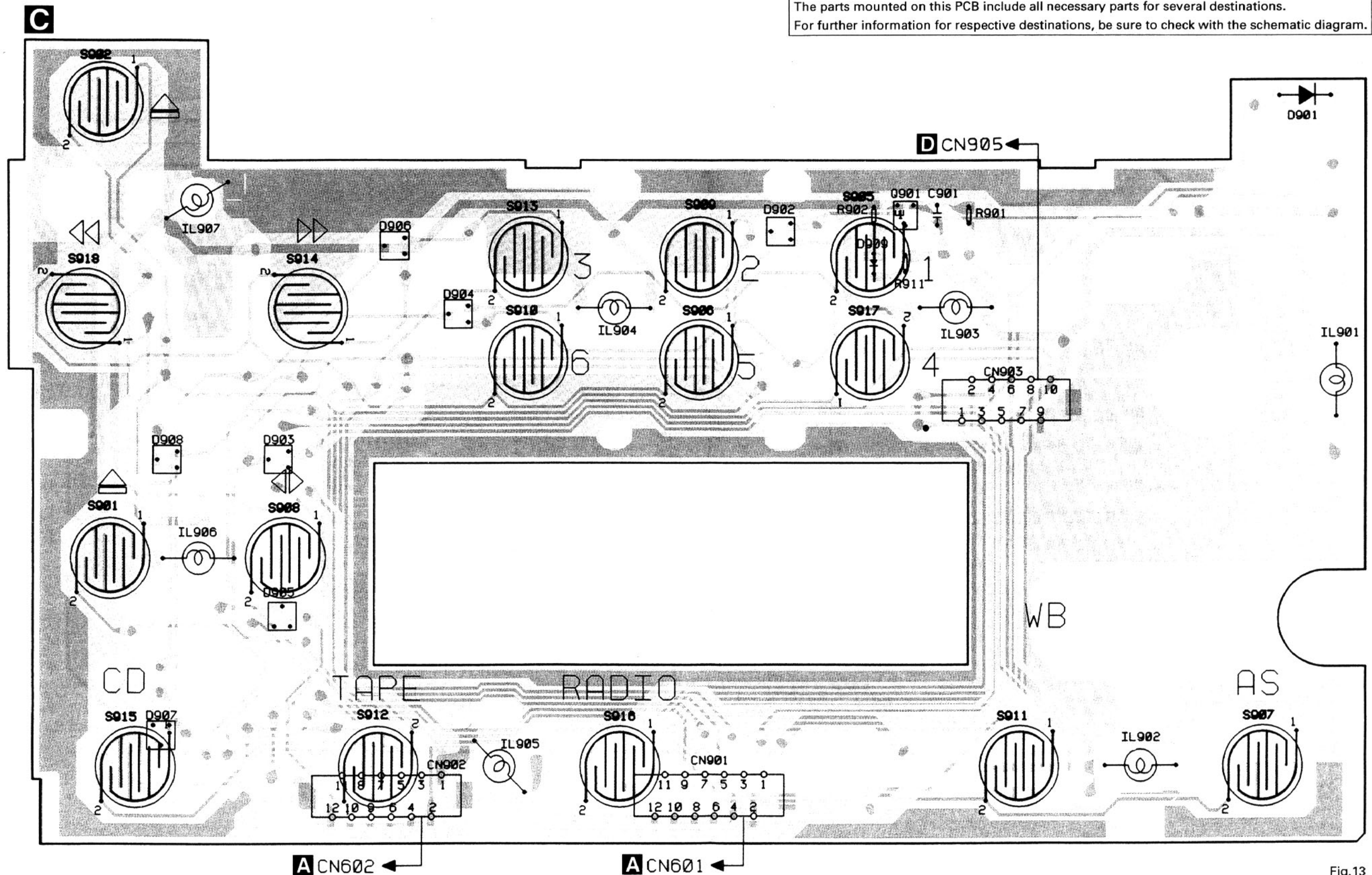


Fig.13

4.4 CD MECHANISM MODULE

● (1/2)

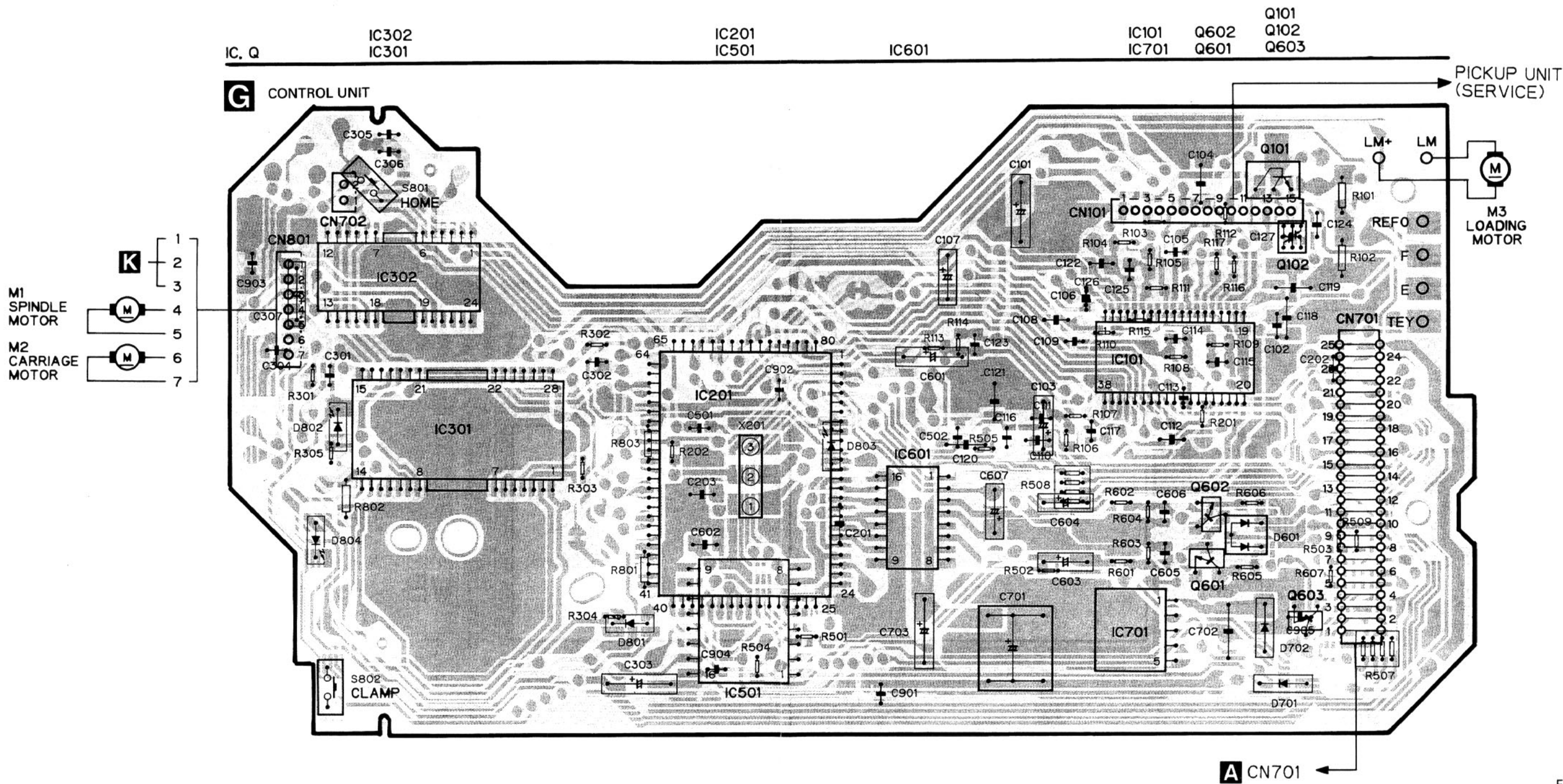
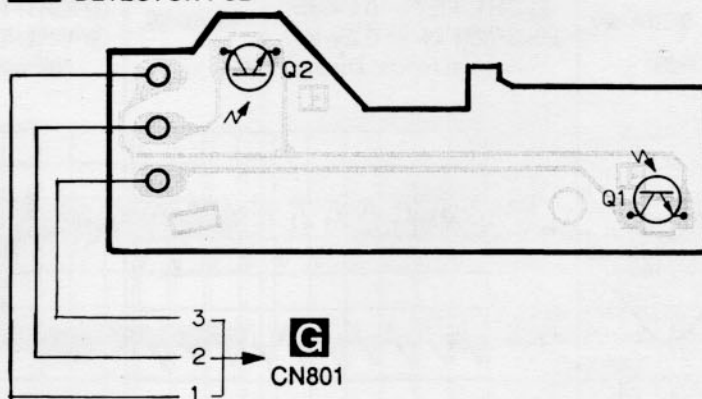


Fig.14



DETECTOR PCB



PICKUP UNIT(SERVICE)

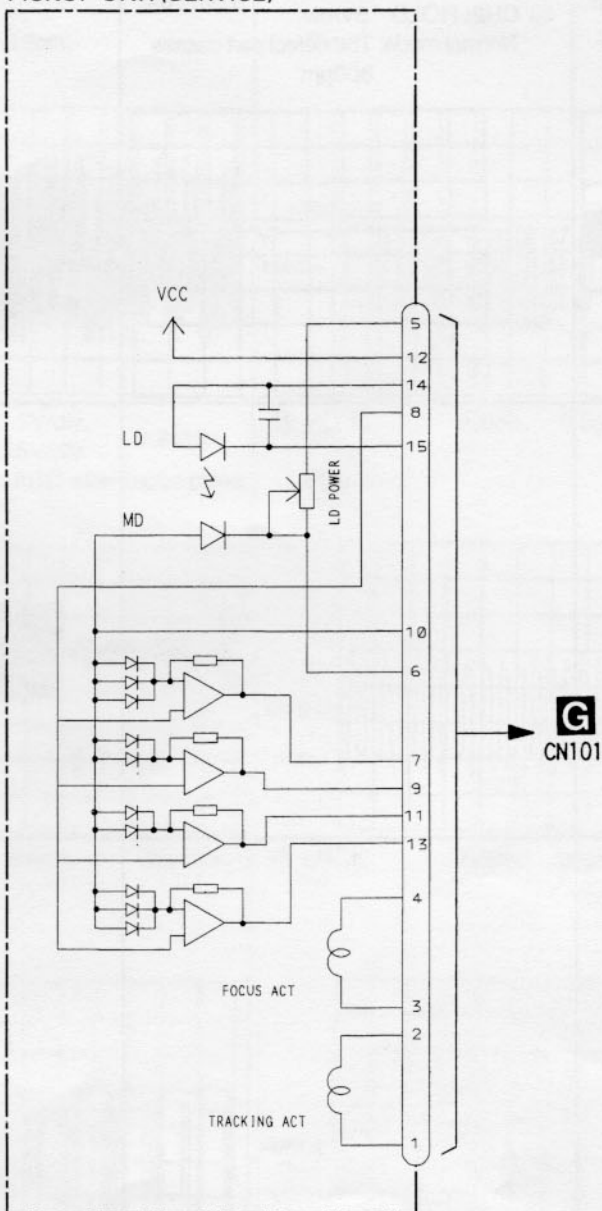


Fig.15

NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.



● (2/2)

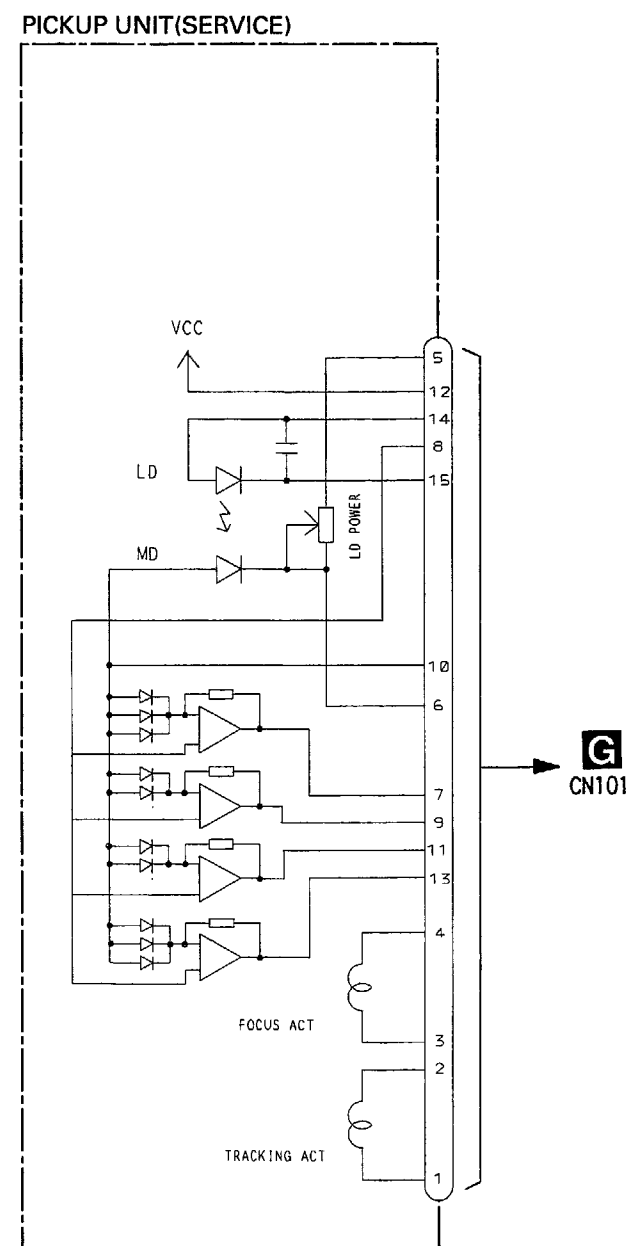
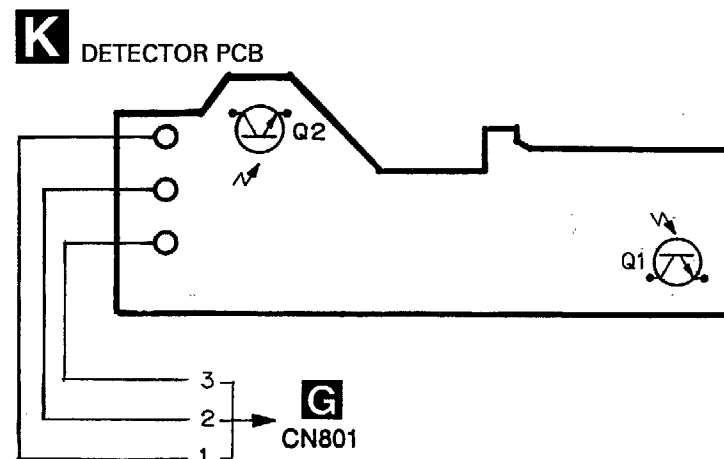


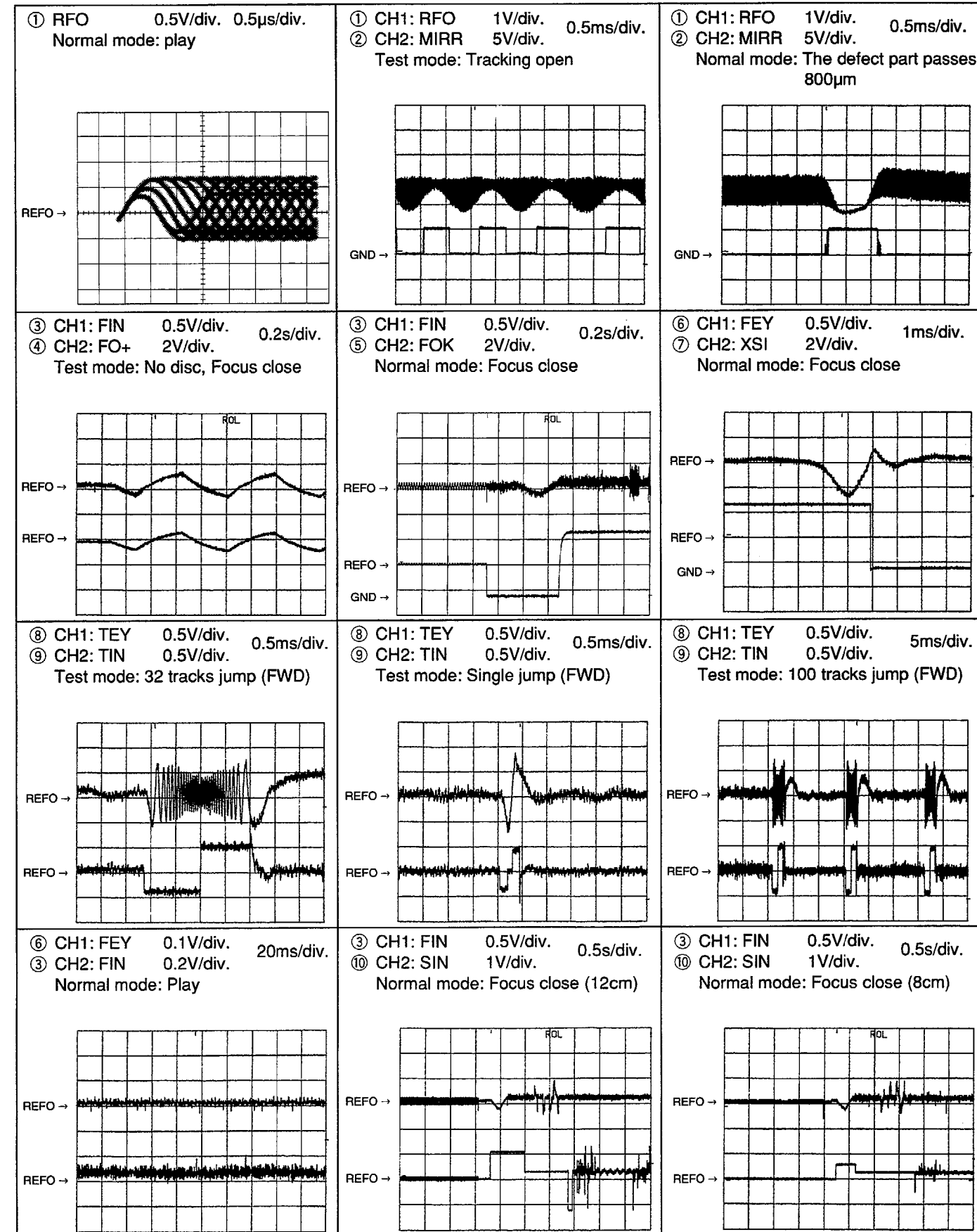
Fig.15

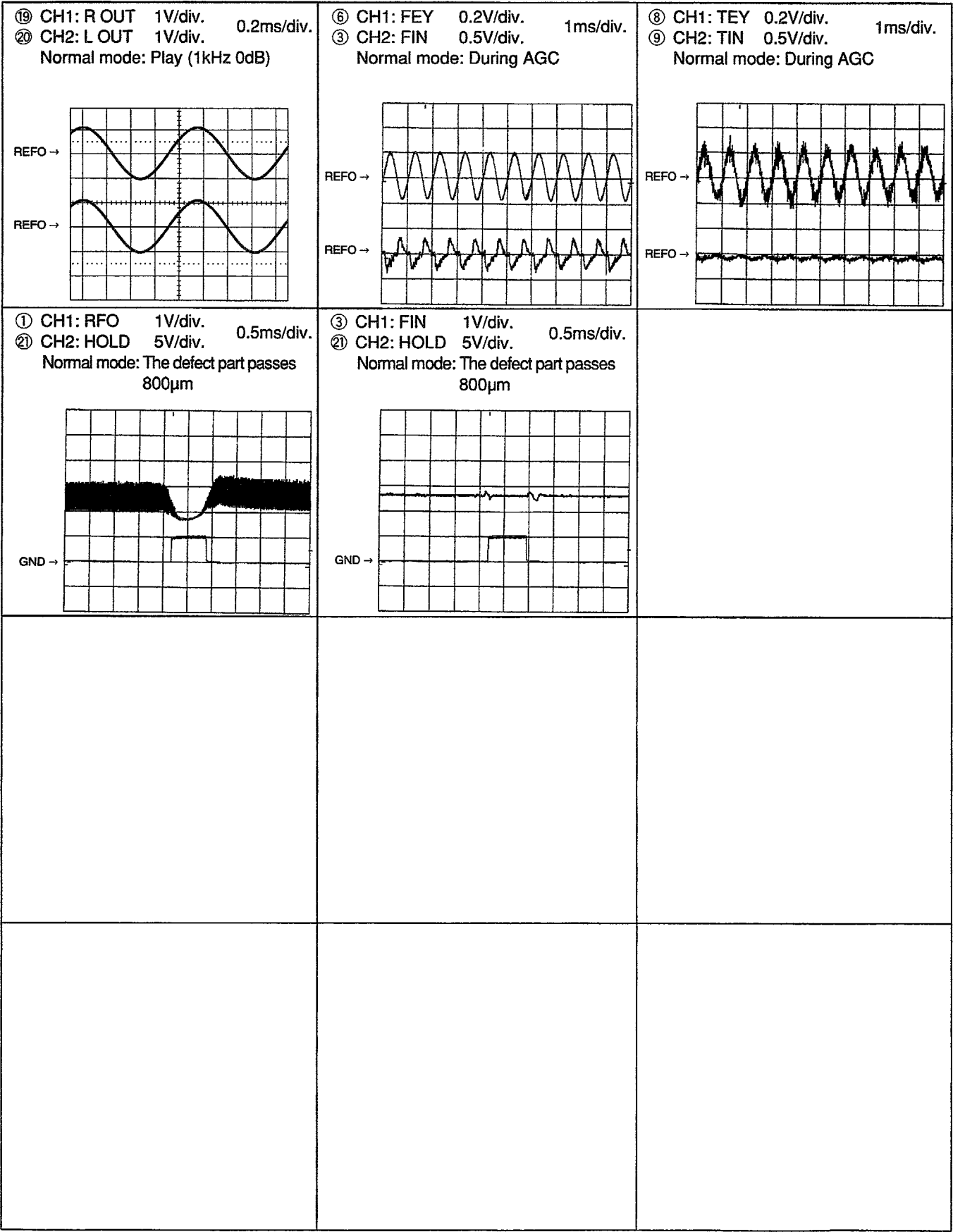
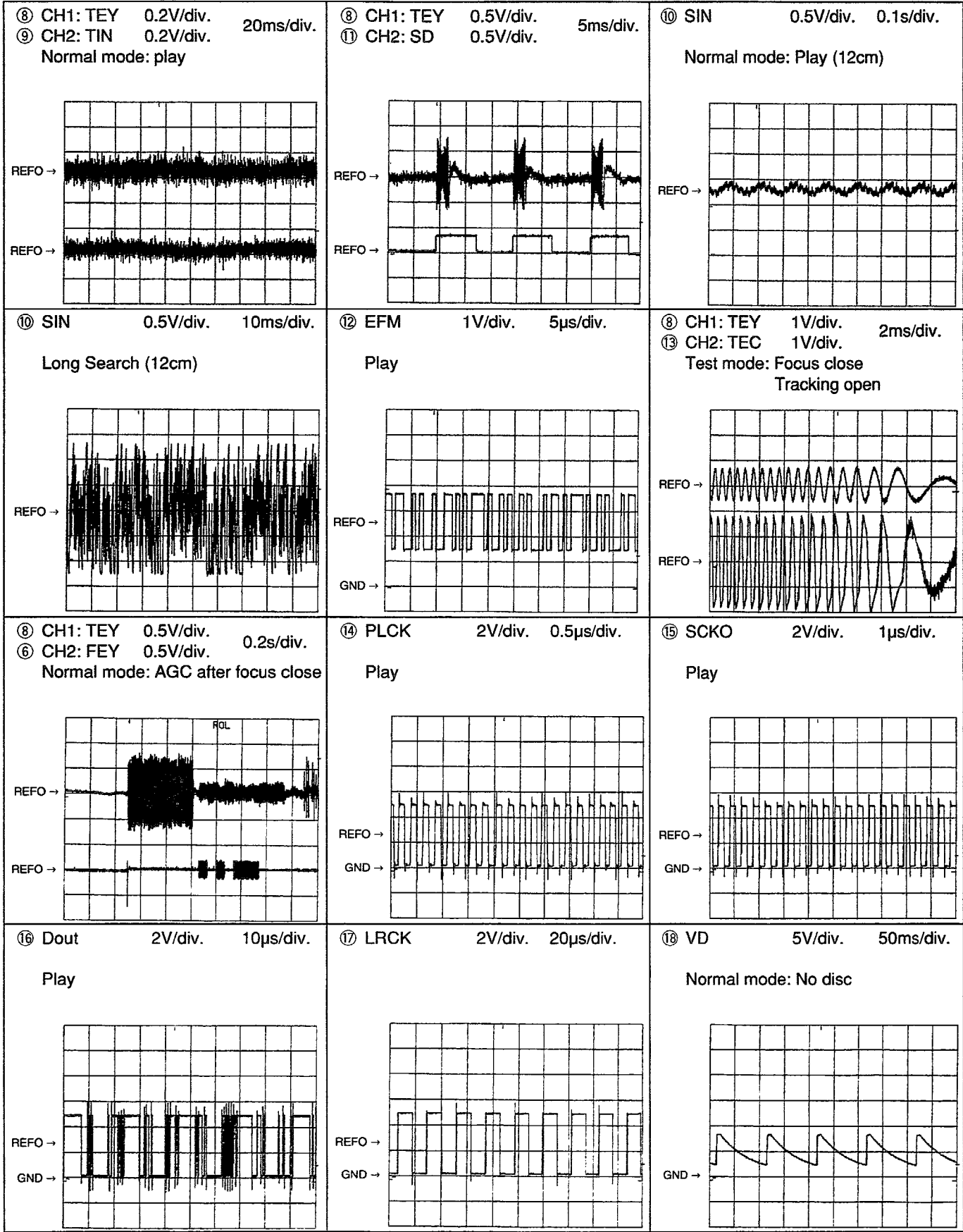
NOTE:

The parts mounted on this PCB look different from the original parts.

Note:1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO:2.5V

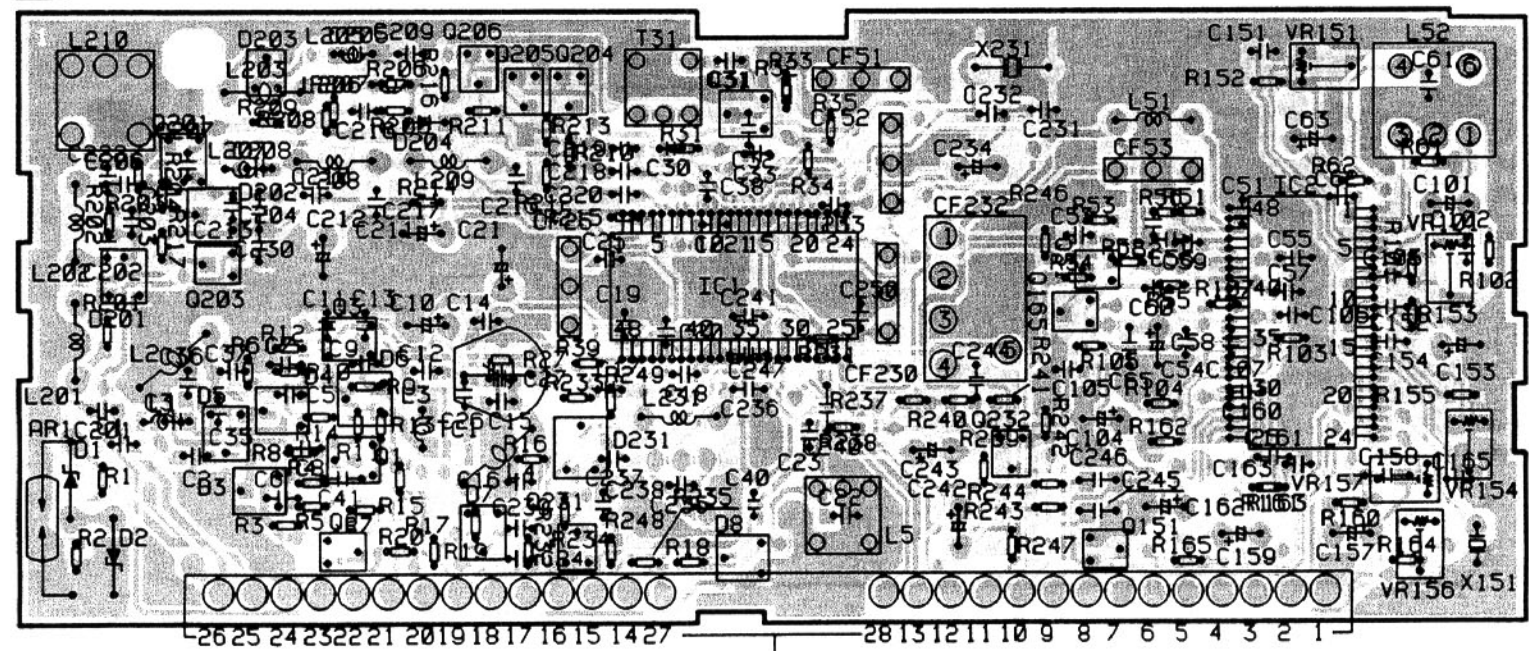
● Waveforms





4.5 TUNER UNIT

F



A

ADJ	IC, Q
VR151	Q206 Q205 Q201 Q204 Q31
VR101	IC1 Q203 Q51 IC2 Q165 Q3
VR154	Q232
VR157	Q1 Q151
	Q2 Q231
VR156	

Fig.16

NOTE:
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

4.6 CASSETTE MECHANISM MODULE

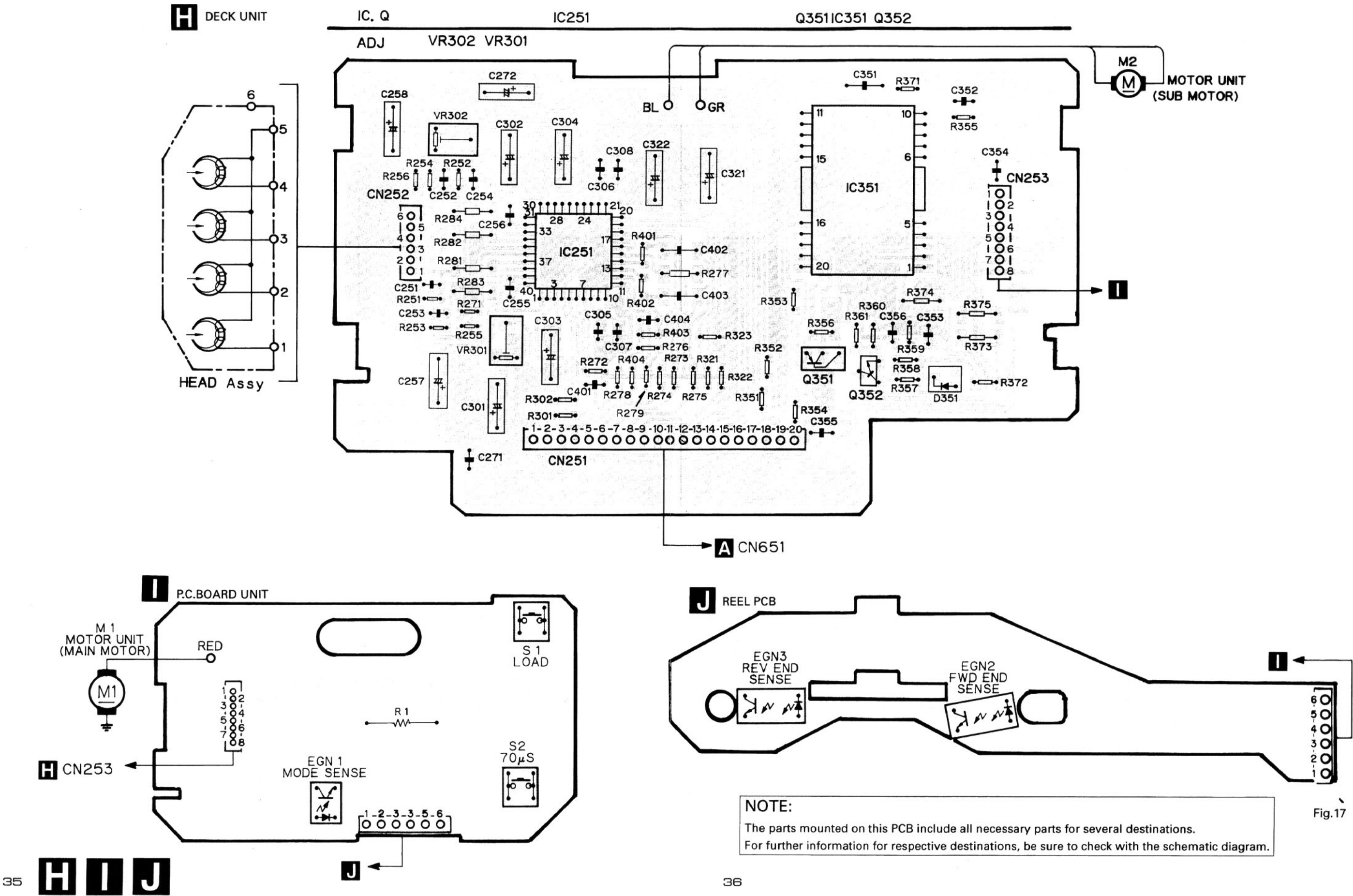


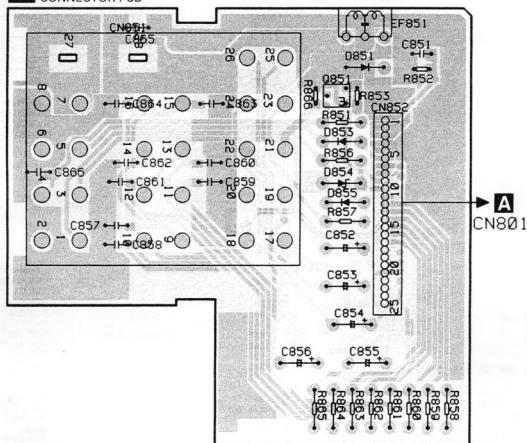
Fig.17

4.7 CONNECTOR PCB, VOLUME UNIT

IC. Q

Q851

B CONNECTOR PCB



NOTE:

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

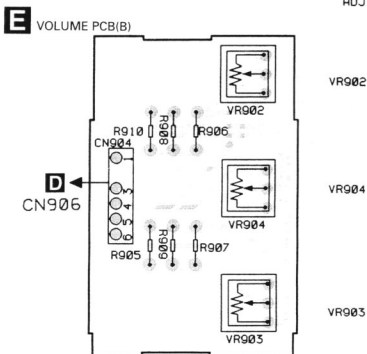
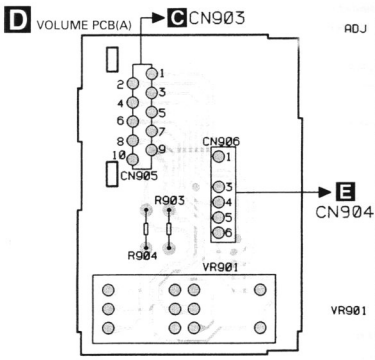


Fig.18

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○○J,RS1/○○S○○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol & No. Part Name=====

Part No.

M Unit Number: CWE1396
Unit Name : WB Unit

MISCELLANEOUS

IC 801		TK10483Z
IC 802		KHA804
Q 801		2SK241
Q 802		2SC2786
D 801		KV1310
L 801 802 804	Coil	CTC1006
L 803	Coil	CTC1030
L 805	Coil	CTE1001
T 801	Coil	CTE1002
T 802	Coil	CTE1003
CF 801	FM Ceramic Filter	CTF-101
CF 802	Filter	CTF1350
X 801	Crystal Resonator 50.59MHz Bead Core	CSS1001 CTX-022

RESISTORS

R 802 806	RD1/4PU331J
R 803	RD1/4PU682J
R 804	RD1/4PU153J
R 805	RD1/4PU181J
R 807	RD1/4PU470J
R 808	RS1/10S102J
R 809 819	RS1/10S103J
R 810	RD1/4PU104J
R 811	RD1/4PU103J
R 812	RD1/4PU332J
R 813 814	RD1/4PU332J
R 815 816	RD1/4PU473J
R 817	RD1/4PU183J

CAPACITORS

C 801 811	CCSQCH020C50
C 802 803	CCSQCH120J50
C 804 807 810	CKSQYB102K50
C 805	CCSQCH030C50
C 806 818 821	CKSQYB103K50
C 808 809	CCSQUJ101J50
C 812	CCSQCH010C50
C 813	CCSQCH180J50
C 814	CEA010M50LS2
C 815 816	CQEA683J50
C 817	CKSQYB473K25
C 819	CCSQCH040C50
C 820	CCSQCH101J50
C 822 823	CKSQYF104Z25
C 824	CEA470M16LS
C 825	CKSYF224Z50

====Circuit Symbol & No. Part Name=====

Part No.

F Unit Number: CWE1422
Unit Name : Tuner Unit

MISCELLANEOUS

IC 1		PA4023A
IC 2		PA4024A
Q 1 31		2SC2712
Q 3		3SK263
Q 51		2SK1067
Q 151		DTC124EU
Q 201		FC12
Q 203		DTC124EU
D 3 202		1SV251
D 4		1SV250
D 5 7 8		KV1410-F1
D 6 201		MA157
D 231		SVC253
L 1	Inductor	LCTBR12K2125
L 2	Coil	CTC1145
L 3	Inductor	LCTB4R7K2125
L 4	Coil	CTC1131
L 5	Coil	CTC1147
L 51	Ferri-Inductor	LAU150K
L 52	Coil	CTC1136
L 201	Ferri-Inductor	LAU4R7K
L 202	Ferri-Inductor	LAU330K
L 203	Inductor	CTF1371
L 208	Inductor	LAU390K
L 209	Ferri-Inductor	LAU680K
L 210	Coil	CTB1103
L 231	Inductor	LAU3R3J
T 31	Coil	CTE1116
CF 25 51 52 53	Ceramic Filter	CTF1290
CF 230	Crystal Filter	
CTF1262		
CF 232	Ceramic Filter	CTF1348
X 151	Radiator 918.5Hz	CSS1365
X 231	Crystal Resonator 10.26MHz	CSS1111
VR 101	Semi-fixed 15kΩ(B)	CCP1230
VR 154	Semi-fixed 150kΩ(B)	CCP1236
VR 156	Semi-fixed 68kΩ(B)	CCP1234
VR 157	Semi-fixed 47kΩ(B)	CCP1233

RESISTORS

R 3 10	RS1/16S223J
R 4 6	RS1/16S101J
R 5	RS1/16S101J
R 7	RS1/10S331J
R 8 17 18 232	RS1/16S473J
R 9 215	RS1/16S473J
R 11	RS1/16S124J
R 12	RS1/16S474J
R 15	RS1/16S271J
R 16 52 53 239	RS1/16S104J

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
D 401 402 403 404 405 406 407 408	RD10ES(B2)	R 514	RA4C103J
D 409 410 501	MA151WK	R 515 614 659	RA4C102J
D 411 656	MA151WA	R 516 524 545 603 619 716 811 834	RS1/10S472J
D 471	RD4R7JS(B3)	R 520 528	RS1/10S562J
D 502 503 802 804 806 855	1SS133	R 523 670 801 828 838	RS1/10S152J
D 504	RD2R7M(B2)	R 526 527 665 703 705 719 720 813 816	RS1/10S102J
D 601	IMN10	R 531	RD1/4PU180J
D 651 653	RD4R7ES(B3)	R 532	RS1/10S0R0J
D 652 654 803 805 854	RD16ES(B3)	R 533	RS1/10S510J
D 655	RD13ES(B2)	R 534	RS1/10S0R0J
D 801	RD8R2JS(B1)	R 535 541	RS1/10S0R0J
D 807	ERA15-02VH	R 536	RS1/10S472J
D 808	RD7R5JS(B3)	R 537	RD1/4PU100J
D 809 851	ERA15-02VH	R 538	RS1/10S103J
D 853	ERA15-10VH	R 609	RA3C222J
L 501 504 506	LAU4R7K	R 610	RS1/10S184J
L 601 602 701	LAU4R7K	R 611 612 660 661 702 721	RA3C102J
L 502 503	RD1/4PU0R0J	R 613 653 655 722	RA4C681J
L 507	CTF1053	R 616 620 621 627 668 709 712 717 718 724	RS1/10S473J
L 508	CTF1374	R 617 630	RA3C472J
L 509	CTE1123	R 623 625 626 628 669 706 707 708 711 713	RS1/10S222J
L 510	LCTBR27K2125	R 629	RA4C222J
L 511	LCTBR22K2125	R 631	RA3C223J
L 512	RD1/4PU0R0J	R 654 656	RA4C473J
L 651	LAU220K	R 657	RA4C472J
L 652	LAU220K	R 658	RA4C223J
L 653	CTH1180	R 662 663 701	RA3C473J
L 801	CTH1074	R 671 812	RS1/10S822J
TH 701	CCX1015	R 674	RS1/10S270J
X 501	CSS1030	R 704	RA3C102J
X 601	CSS1071	R 710	RS1/10S105J
X 651	CSS1393	R 714	RS1/10S122J
X 701	CSS1354	R 715	RS1/10S303J
FU 851	CEK1005	R 725 726	RS1/10S473J
	CWE1422	R 727	RS1/10S102J
EF 851	CCG1006	R 805 831	RS1/10S331J
AR 501	DSP-201M	R 807	RD1/4PU223J
		R 808	RD1/4PU472J
		R 809	RD1/4PU223J
		R 810	RS1/10S222J
RESISTORS			
R 401 402 409 410 411 412 413 414 502 525	RS1/10S102J	R 814 829	RS1/10S222J
R 403 404	RS1/10S222J	R 817	RS1/10S473J
R 405 406	RS1/10S162J	R 818	RS1/10S222J
R 415 416	RS1/10S273J	R 819	RS1/10S103J
R 417 418	RS1/10S101J	R 820	RS1/10S102J
R 419 420	RS1/10S361J		
R 421 422 423 424	RS1/10S562J	R 823 825 832 835	RS1/10S223J
R 425 426 427 428 429 430 431 432 437 438	RS1/10S472J	R 826	RS1/10S122J
R 433 434 435 436 441 442 443 444	RS1/10S470J	R 836	RS1/10S681J
R 439 440 478 479 489 490 510 511	RS1/10S472J	R 837	RS1/10S242J
		R 839	RS1/10S153J
R 471 501 529 601 672 673 804 824 833	RS1/10S103J		
R 472	RS1/10S133J	R 840	RD1/4PU100J
R 473	RS1/10S103J	R 851	RD1/4PU112J
R 474	RS1/10S682J	R 852	RS1/10S121J
R 475 802 803 830	RS1/10S471J	R 853	RS1/10S103J
		R 856	RD1/4PU221J
R 476 477	RS1/10S153J		
R 480	RS1/10S473J	R 857	RD1/4PU222J
R 481 482 487 488	RS1/10S123J	R 858 859 860 861 862 863 864 865	RD1/4PU470J
R 483 484 485 486 517 530 806 815 821 822	RS1/10S223J		
R 503 651 652 664 667 723 827	RS1/10S681J	CAPACITORS	
R 504	RS1/10S393J	C 401 402	RD1/4PU102J
R 505 506 521 522 604 605 618 622	RS1/10S222J	C 403 404 405 406 407 408 657 856	CEA4R7M35LS
R 507 508 509 542 543 544 606 607 608 615	RS1/10S473J	C 409 410 471 663	CEA2R2M50LS2
R 512	RS1/10S392J	C 411 412 415 416 431 432	CEALNP100M10
R 513	RS1/10S223J	C 413 414	CKSQYB272K50

====Circuit Symbol & No. Part Name=====	Part No.
C 417 418	CEA4R7M25LS2
C 419 420	CKSQYB392K50
C 421 422	CKSQYB222K50
C 423 424	CKSQYB152K50
C 425 426	CEALNP1R5M50
C 427 428 437 438 439 440 441 442 443 444	CCSQCH101J50
C 429 430	CKSQYB184K16
C 433 434 435 436 473 519 606 703 810 852	CEA100M16LS2
C 445 446 447 448 449 450 451 452 478 512	CKSQYB102K50
C 453 454 455 456 457 458 459 460	CEAS100M50
C 461 462	CKSQYB334K16
C 472	CKSQYB153K25
C 474 477 503 524 528 529 530 533 601 602	CKSQYB103K50
C 475	CEA101M10LS
C 476 483 484 808	CEA330M10LS
C 479	CEALNP4R7M16
C 480 522 668 669	CCSQCH101J50
C 481 482	CCSQCH470J50
C 501	CKSQYB102K50
C 502	CKSQYB223K25
C 504	CKSQYB102K50
C 505 508 509 511 513 517 518 526 611 622	CKSQYB223K25
C 507	CKSQYB104K16
C 510 514 623	CKSQYB471K50
C 515 516	CKSQYB473K25
C 520 521 673 674	CCSQCH270J50
C 525	CCH1280
C 527	CFTNA104J50
C 531 532	CCSQCH100D50
C 541	CCSQCH101J50
C 603 604 607 612 613 614 615 616 617 618	CKSQYB103K50
C 605	CCL1040
C 608	CKSYB223K25
C 609 610 653 654 655 656 701 813	CKSQYB102K50
C 619 620 621 624 651 658 659 660 661 662	CKSQYB103K50
C 652	CASQA4R7M10
C 664 665 666 704 814 817 819	CKSQYB103K50
C 667	CKSQYB223K25
C 671	CEAS331M6R3
C 672 702 803 805 809 811 812 851	CKSQYB223K25
C 801 815 818	CEAS101M10
C 802 816	CKSQYB472K50
C 804	CEAS471M25
C 806	CEA330M25LS
C 807	CEA4R7M35LS
C 853 854 855	CEA100M16LS2
C Unit Number: CWM4355 Unit Name : Key Board Unit	
MISCELLANEOUS	
Q 901	2SC2712
D 901	AA2222S
D 902 903 904 905 906 907 908	MA151WK
IL 901 902 903	CEL1449
IL 904 905 906 907	CEL1449
RESISTORS	
R 901	RS1/10S102J
R 902	RS1/10S821J
CAPACITORS	
C 901	CKSQYB103K50

====Circuit Symbol & No. Part Name=====	Part No.
Volume Unit Consists of Volume PCB(A) Volume PCB(B)	
DE Unit Number: CWM4511 Unit Name : Volume Unit	
MISCELLANEOUS	
VR 901	Volume 50kΩ(B)
VR 902 903 904	Volume 50kΩ(B)
CSD1031	
CCS1089	
RESISTORS	
R 903 904 905 906 907 908 909 910	RD1/4PU182J
G Unit Number: CWX2096 Unit Name : Control Unit	
MISCELLANEOUS	
IC 101	UPC2572GS
IC 201	UPD63702GF
IC 301	XLA6997FP
IC 302	XLA6285FP
IC 601	TA2063F
IC 701	PQ05TZ51
Q 101	2SD1664
Q 102	UMD2N
Q 601 602	2SD1781K
Q 603	2SB709A
D 601	MA151WA
D 701 702	1SR154-400
D 801 802	CL200IRX
X 201	CSS1363
S 801 802	CSN1028
RESISTORS	
R 101	RS1/8S100J
R 102	RS1/8S120J
R 103	RS1/16S102J
R 104	RS1/16S822J
R 105	RS1/16S682J
R 106	RS1/16S183J
R 107	RS1/16S822J
R 108	RS1/16S333J
R 109	RS1/16S683J
R 110	RS1/16S134J
R 111	RS1/16S273J
R 112	RS1/16S222J
R 113 114 607	RS1/16S103J
R 115	RS1/16S102J
R 116 117	RS1/16S163J
R 201	RS1/16S104J
R 202	RS1/16S473J
R 304 501	RS1/16S0R0J
R 505	RS1/16S102J
R 507	RA4C102J
R 508	RA4C681J
R 601 602	RS1/16S102J
R 603 604	RS1/16S223J
R 605 606	RS1/16S162J
R 801 802	RS1/8S751J
CAPACITORS	
C 101 601 703	CEV101M6R3
C 102	CKSQYB104K16
C 103	CEV470M6R3
C 104	CKSYB334K16
C 105	CCSRCH330J50

====Circuit Symbol & No. Part Name=====	Part No.
C 106 304	CKSRB103K25
C 107 603 604	CEV4R7M35
C 108	CKSQYB273K50
C 109	CCSRCH101J50
C 110 202	CKSQYB104K16
C 111	CKSRB332K50
C 112	CKSQYB473K16
C 113	CKSRB103K25
C 114	CKSRB391K50
C 115	CCSRCH121J50
C 116	CKSRB682K25
C 117	CKSRB333K16
C 118 201	CKSYB334K16
C 119	CKSYB334K16
C 120 121 702	CKSYB334K16
C 122 124	CKSQYB104K16
C 123	CKSRB472K50
C 125	CCSRCH060D50
C 126	CKSRB153K25
C 127	CCSRCH102J25
C 203	CKSQYB104K16
C 303	CEV470M16
C 305 306	CKSRB103K25
C 307	CEV100M25
C 502	CKSRB471K50
C 602	CKSQYB104K16
C 605 606	CKSRB152K50
C 607	CEV220M6R3
C 701 22μF/6.3V	CCH1233
C 901 903	CCSRCH471J50
C 902	CCSRCH271J50
C 904	CCSRCH101J50

K Unit Number:
Unit Name : Detector PCB

Q 1 2 Photo Transistor CPT-230S-X

H Unit Number: CWM4528
Unit Name : Deck Unit

MISCELLANEOUS

IC 251	CXA1911Q
IC 351	PA2020A
Q 351	2SB1260
Q 352	2SC4102
D 351	MA141K

VR 301 302 Semi-fixed 22kΩ(B) CCP1129

RESISTORS

R 255 256	RS1/16S181J
R 271	RS1/16S183J
R 272	RS1/16S183J
R 273 274 275 276 321 322 351 352 353 354	RS1/16S102J
R 277 281 282 283 284 373 374 375	RS1/8S0R0J
R 278 301 302 371 404	RS1/16S0R0J
R 355	RS1/10S274J
R 356	RS1/10S202J
R 357	RS1/10S472J
R 358 359	RS1/10S103J
R 360	RS1/10S102J
R 361	RS1/10S622J
R 372	RS1/10S0R0J
R 401	RS1/16S821J
R 402	RS1/16S392J
R 403	RS1/16S105J

====Circuit Symbol & No. Part Name=====	Part No.
CAPACITORS	
C 251 252 253 254	CKSRB391K50
C 255 256	CKSRB103K50
C 257 258	CEV470M6R3
C 271 307 308	CKSQYB104K16
C 272 301 302	CEV100M16
C 303 304 322	CEV010M50
C 305 306	CKSQYB683K16
C 351	CKSYB224K25
C 352	CKSQYB392K50
C 353 356	CKSQYB103K50
C 354	CKSQYB473K50
C 355	CKSYB104K50
C 401	CCSRCH151J50
C 402	CKSYB684K16
C 403	CKSYB333K25
C 404	CKSRB333K16

I Unit Number:
Unit Name : P.C.Board Unit

S 1 2 Switch (70μS,Load) ESG1004
EGN 1 Photo-Interrupter EGN1005
R 1 RD1/4HM181J

J Unit Number:
Unit Name : Reel PCB

EGN 2 3 Photo-Reflector EGN1004

Miscellaneous Parts List

M 1	Pickup Unit(Service)	CXX1230
M 2	Motor Unit(Spindle)	CXA8912
M 3	CRG Motor Unit(Carriage)	CXA8986
M 1	Load Motor Unit>Loading)	CXA8702
	Motor Unit (Main)	EXA1381
M 2	Motor Unit (Sub)	EXA1382
HD 1	Head Assy	EXA1488

6. ADJUSTMENT

6.1 CHECKING THE GRATING

● Checking the Grating After Changing the Pickup Unit(Service)

·Note :

Unlike previous CD mechanism modules the grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

·Purpose :

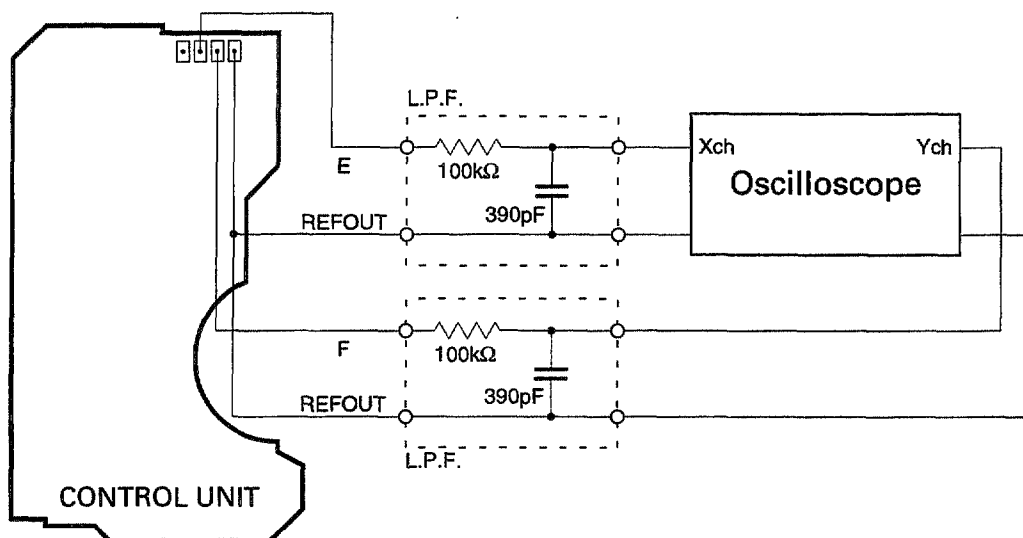
To check that the grating is within an acceptable range.

·Symptoms of Mal-adjustment :

If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or track searching taking a long time, may appear.

·Method :

- | | |
|----------------------|---------------------------|
| ·Measuring Equipment | ·Oscilloscope, Two L.P.F. |
| ·Measuring Points | ·E, F, REFOUT |
| ·Disc | ·ABEX TCD-784 |
| ·Mode | ·TEST MODE |



·Checking Procedure

1. In test mode, load the disc and switch the 5V regulator on.
2. Using the **UP** and **DOWN** buttons, move the PU unit to the innermost track.
3. Press key 5 to close focus, the display should read "91". Press key 2 to implement the tracking balance adjustment the display should now read "81". Press key 5 4 times. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75°. Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

·Note

Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

·Hint

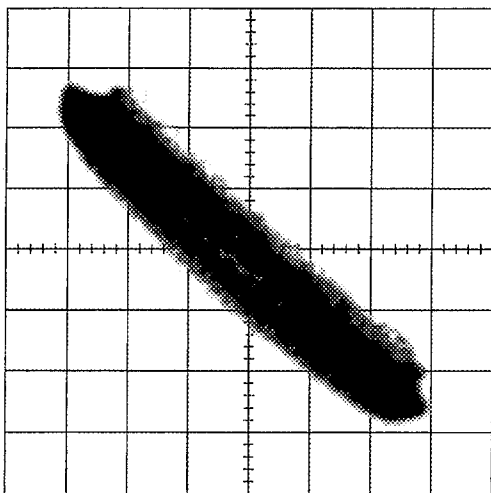
Reloading the disc changes the clamp position and may decrease the "wobble".

Grating waveform

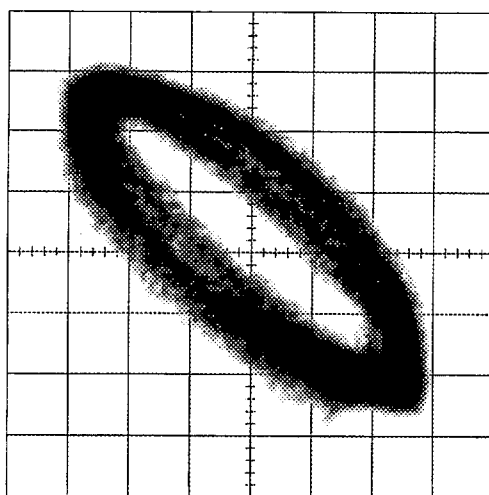
Ech → Xch 20mV/div, AC

Fch → Ych 20mV/div, AC

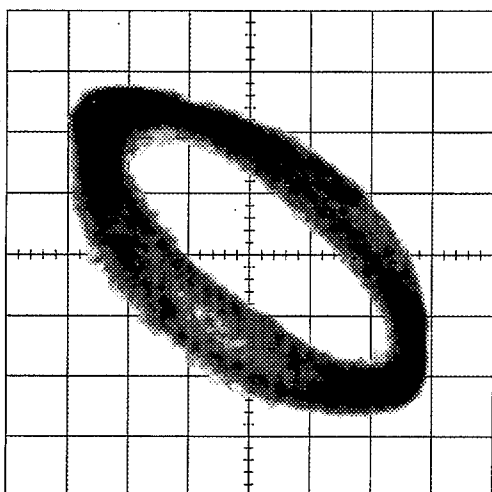
0°



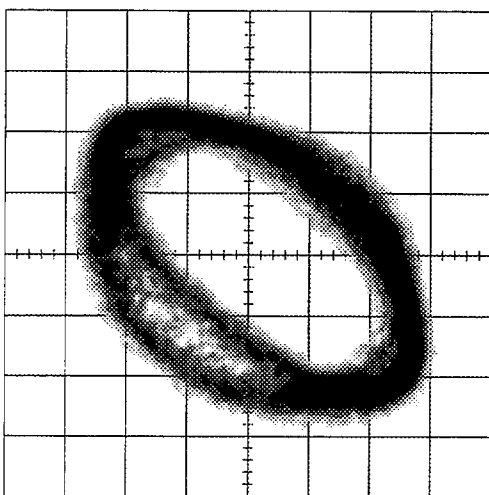
30°



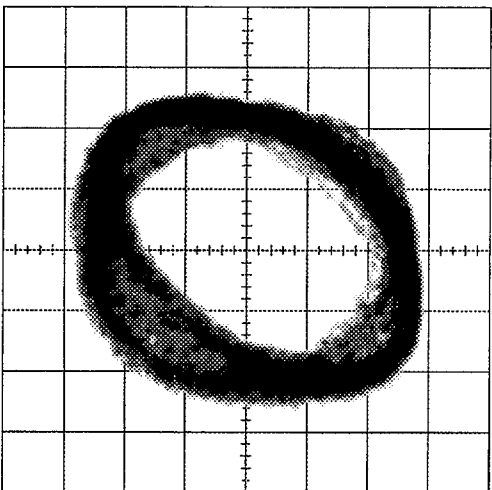
45°



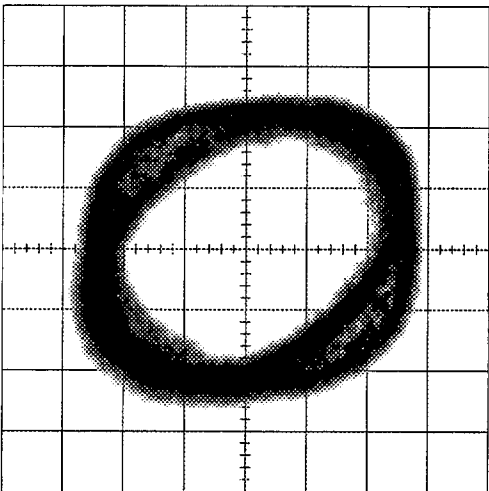
60°



75°



90°



6.2 TUNER/AUDIO ADJUSTMENT

● Connection Diagram

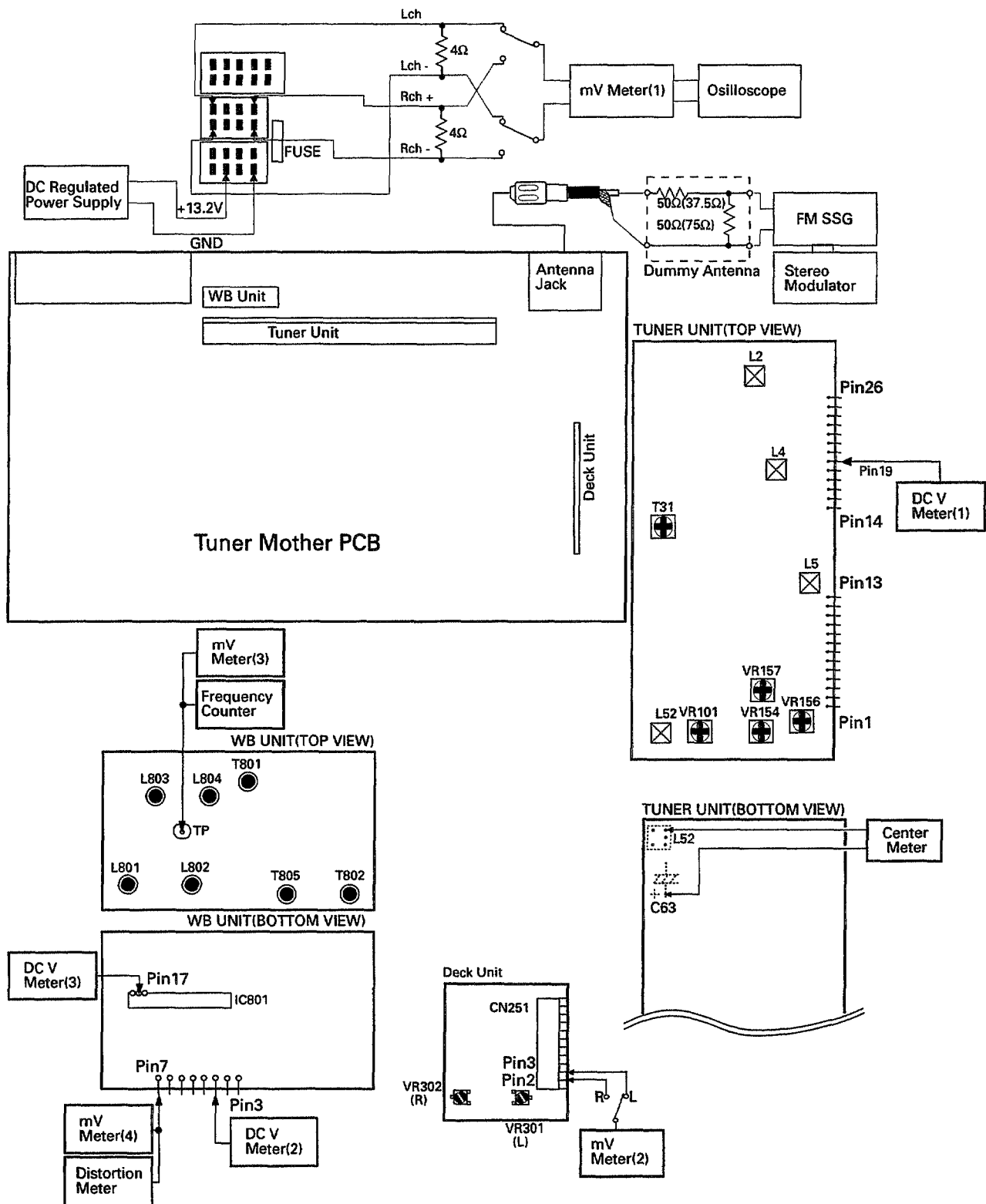


Fig.19

FM ADJUSTMENT

NOTE: Before proceeding to further adjustments after switching power ON, let the tuner run for ten minutes to allow the circuits to stabilize.

Modulation M : MONO MOD., 400Hz, 30%(22.5kHz Dev.)

S : STEREO MOD., 1kHz, L or R=30%(20.25+7.5kHz Dev.)

	No.	FM SSG		Displayed Frequency(MHz)	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
TUN Volt	1	108.0	—	108.0	L5	DC V Meter(1) : 6.5V
Center	1	98.1 M	65	98.1	L52	Center Meter : 0
ANT	1	89.9 M	5	89.9	L2	mV Meter(1) : Maximum
RF	1	89.9 M	5	89.9	L4	mV Meter(1) : Maximum
IFT	1	98.1 M	5	98.1	T31	mV Meter(1) : Maximum
Seperation	1	98.1 S	65	98.1	VR101	mV Meter(1) : Separation Maximum
ARC	1	98.1 S	40	98.1	VR154	mV Meter(1) : Separation5dB
Soft Mute	1	98.1 M	15	98.1	VR157	mV Meter(1) : -3dBs
Search	1	98.1 M	25	98.1	VR156	DC V Meter(1) : Approx.4V (STEREO MODE)

DOLBY NR ADJUSTMENT

No.	Test Tape	Adjustment Point	Adjustment Method (Switch Position)
1	NCT-150 (400Hz, 200nwb/m)	VR301(Lch), VR302(Rch)	mV Meter(2) : -6.0dBs+1.5dB,-0.5dBs (DOLBY NR switch : OFF)

WB ADJUSTMENT

Modulation M : MONO MOD., 400Hz, 100%(75kHz Dev.)

U : Unmodulated

	No.	FM SSG		Displayed Channel	Adjustment Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dBf)			
1ST OSC	1	162.475 M	15	CH3	L804	mV Meter(3) : Maximum
	2	162.475 M	15	CH3	L803	Frequency Counter : 151.775MHz
2ND OSC	1	162.475 M	15	CH3	L805	DC V Meter(2) : 5V
ANT,RF	1	162.475 M	15	CH3	L801	mV Meter(4) : Maximum
	2	162.475 M	15	CH3	L802	mV Meter(4) : Maximum
	3	162.475 M	5	CH3	L801	mV Meter(4) : Maximum
	4	162.475 M	5	CH3	L802	mV Meter(4) : Maximum
DET.	1	162.475 M	65	CH3	T802	Distortion Meter : Minimum
IFT	1	162.475 M	14	CH3	T801	DC V Meter(4) : Maximum (more than 1.5V)
SEEK	1	162.475 U	10-15	CH3		Verify that SEEK stops.

7. GENERAL INFORMATION

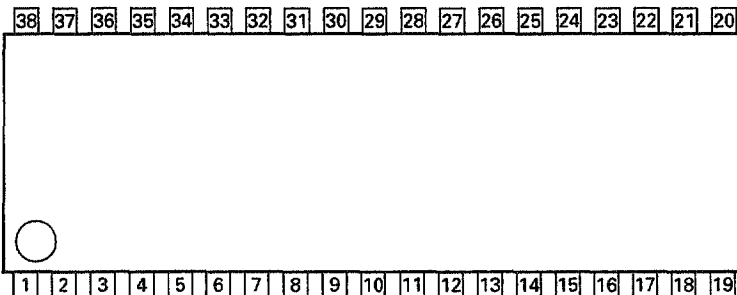
7.1 PARTS

7.1.1 IC

● Pin Functions (UPC2572GS)

Pin No.	Pin Name	I/O	Function and Operation
1	EFM-IN	I	EFM comparator input
2	RFO	O	AGC amplifier output
3	C. AGC		Connects AGC peak detection condenser
4	RF-IN	I	RF signal DC component cut input
5	RF-OUT	O	RF amplifier output
6	RF-	I	RF amplifier inverted input
7	C1, 3T		Connects RF3T component detection condenser
8	C2, 3T		Connects RF3T component detection condenser
9	Vcc		Power supply
10	A	I	A signal input
11	C	I	C signal input
12	B	I	B signal input
13	D	I	D signal input
14	F	I	F signal input
15	E	I	E signal input
16	PD	I	APC amplifier input
17	LD	O	APC amplifier output
18	LDON	I	Laser diode ON/OFF input
19	VREF-OUT	O	Reference voltage output
20	VREF-IN	I	Reference voltage input
21	DET-OUT	O	Vibration detection circuit output
22	DET-IN	I	Vibration detection circuit input
23	TE-OUT2	O	Tracking error amplifier output (fourfold gain)
24	TE-OUT1	O	Tracking error amplifier output (single fold gain)
25	TE-	I	Tracking error amplifier inverted input
26	GND		GND
27	FE-	I	Focus error amplifier inverted input
28	FE-OUT	O	Focus error amplifier output
29	C.FE	I	Focus error signal DC component cut input
30	3T-OUT	O	RF3T component output
31	MIRR	O	MIRR signal output
32	RFOK	O	RFOK signal output
33	DEFECT	O	DEFECT signal output
34	C. DEF		Connects DEFECT signal detection condenser
35	EFM-OUT	O	EFM comparator output
36	ASY	I	EFM comparator level input
37	TE-BAL	I	Tracking balance control
38	FE-BAL	I	Focus balance control

UPC2572GS

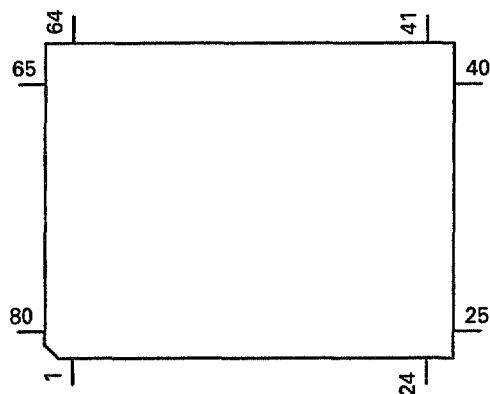


● Pin Functions (UPD63702GF)

Pin No.	Pin Name	I/O	Function and Operation
1	D.VDD		Supplies current of positive voltage to the logic circuits
2	RST	I	System reset input pin
3	AO	I	Microcomputer interface AO="L": STB active and set to address register AO="H": STB active and set to parameter
4	STB	I	Signal to latch serial data within the LSI
5	SCK	I	Clock input pin to input and output serial data
6	SO	O	Outputs serial data and status signal
7	SI	I	Serial data input pin
8	D.GND		Logic circuit GND
9	X.GND		Crystal oscillation circuit GND
10	XTAL	I	Crystal oscillator connection pin
11	XTAL	O	Crystal oscillator connection pin
12	X.VDD		Supplies current of positive voltage to the crystal oscillation circuit
13	DA.VDD		Supplies current of positive voltage to the D/A converter
14	R+	O	Right channel analog audio data output pin
15	R-	O	Right channel analog audio data output pin
16,17	DA.GND		D/A converter GND
18	L-	O	Left channel analog audio data output pin
19	L+	O	Left channel analog audio data output pin
20	DA.VDD		Supplies current of positive voltage to the D/A converter
21	D.VDD		Supplies current of positive voltage to logic circuit
22	FLAG	O	Flag output pin to indicate that audio data currently being output consists of noncorrectable data
23	WDCK	O	Pin to output double the frequency of LRCK
24	C16M	O	Pin to output the clock
25	EMPH	O	Output pin for the pre-emphasis data in the sub-Q code
26	DIN	I	Input pin for serial audio data
27	DOUT	O	Output pin for the serial audio data
28	SCKO	O	Output pin for the clock for the serial audio data
29	LRCK	O	Signals to distinguish the right and left channels of the audio data output from DOUT. Frequency is 44.1kHz at 50% duty at normal regeneration
30	TX	O	Output pin for the digital audio interface data
31	CTLV	I	Oscillation control pin for high-frequency clock generation VCO used for the digital PLL upon regeneration at fast speed of 2- or 4-fold
32	POUT	O	Output point for phase comparison
33	D.GND		GND for the logic circuit
34	VCO	I	Input pin for the inverter
35	VCO	O	Output pin for the inverter
36	D.VDD		Supplies current of positive voltage to the logic circuit
37	PLCK	O	Pin for monitoring the bit clock
38	LOCK	O	Indicates "H" when the synchronized pattern detection signal matches the frame counter output at the EFM recovery modulation, and "L" when they don't match
39	WFCK	O	Minute-cycle signal for the bit clock, the signal indicates the cycle of 1 frame (approx. 7.35kHz)
40	RFCK	O	Minute-cycle signal for the clock, the signal indicates cycle of 1 frame (approx. 7.35kHz)
41	D.GND		GND for the logic circuit
42,43	TEST0,1	I	Test pins
44,45	TM2, TM4	I	Pins for controlling regeneration at fast speed of 2- or 4-fold
46-49	T4-T7	I	Test pins
50,51	C1D1, C1D2	O	Output pin for indicating the C1 error correction results
52-54	C2D1-C2D3	O	Output pin for indicating the C2 error correction results
55	D.VDD		Supplies current of positive voltage to the logic circuit
56	SFSY	O	Outputs 1 word of the subcode. Generally, 1 cycle is approx 136 micro seconds
57	SBSY	O	The signal indicates the beginning of the subcode block. The SFSY signal is output at high level every 98 times

Pin No.	Pin Name	I/O	Function and Operation
58	SBSO	O	Output pin for the subcode data
59	SBCK	I	Input pin for the clock signal for read-out of the subcode data
60	A.GND		GND for the analog circuit
61	MD	O	Output pin for the spindle drive
62	SD	O	Output pin for the sled drive
63	TD	O	Output pin for the tracking drive
64	FD	O	Output pin for the focus drive
65	FBAL	O	Output pin for the focus balance control
66	TBAL	O	Output pin for the tracking balance control
67	A.VDD		Supplies current of positive voltage to the analog circuit
68	TBC	I	Switches coefficient banks for the tracking filter
69	EFM	I	Input pin for the EFM signal
70	HOLD	I	Input pin for the hold control signal
71	RFOK	I	Input pin for the RFOK signal
72	MIRR	I	Input pin for the MIRR signal
73	A.GND		GND for the analog circuit
74,75	VR2,1	I	The signal input through these pins is digitized to 8-bit by the A/D converter, which by operation of the assigned register, can be read into the microcomputer
76	FE	I	Inputs a focus-error signal from the RF amplifier
77	TE	I	Inputs a tracking-error signal from the RF amplifier
78	TEC	I	Input pin for the tracking comparator
79	REFOUT	O	Output point for midpoint potential for the A/D converter for the LSI portion
80	A.VDD		Supplies current of accurate voltage to the analog circuit

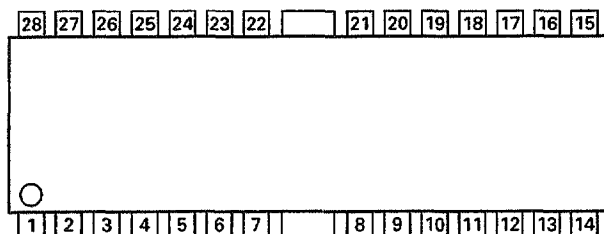
*UPD63702GF



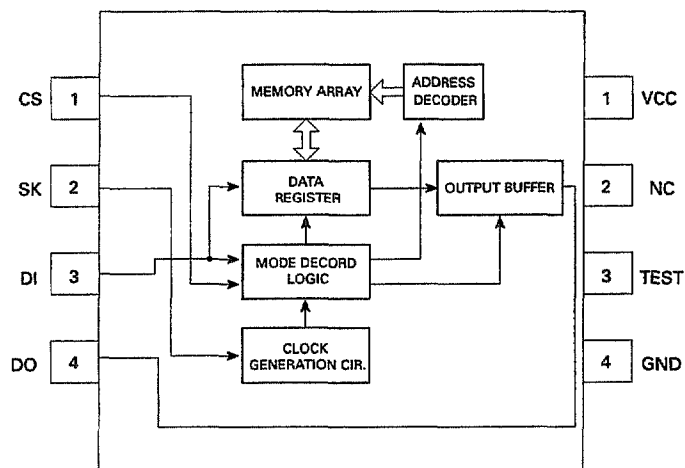
IC's marked by* are MOS type.

Be careful in handling them because they are very liable to be damaged by electrostatic induction.

XLA6997FP



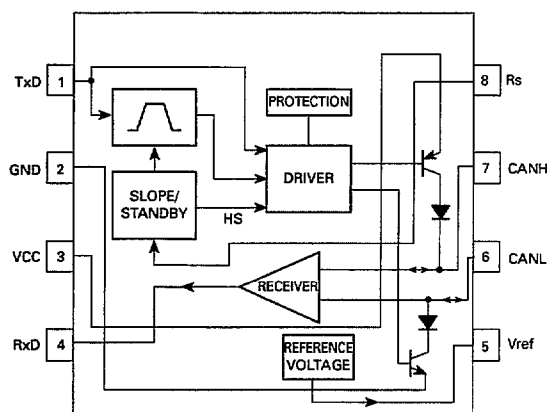
*S-29220A



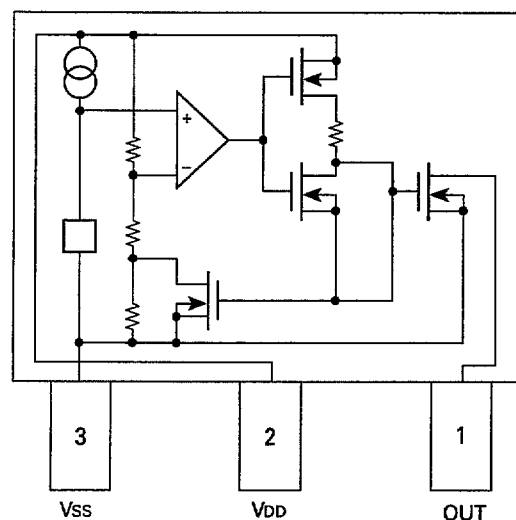
Pin Functions (XLA6997FP)

Pin No.	Pin Name	I/O	Function and Operation
1	OUT1-A	O	CH1 driver output
2	OUT1-B	O	CH1 driver output
3	IN1	I	CH1 input
4	IN1'	I	CH1 gain adjustment input
5	REG-B		PowTr base connection pin for regulator
6	REG OUT	O	Regulator output PowTr collector connection pin
7	REG GND		Regulator GND/Common circuit GND
8	BIAS	I	BIAS input
9	MUTE		Mute control pin
10	REG SW		Regulator switch pin
11	TEMP MON		Humidity monitor pin
12	IN2	I	CH2 input
13	OUT2-B	O	CH2 driver output
14	OUT2-A	O	CH2 driver output
15	GND		GND
16	OUT3-A	O	CH3 driver output
17	OUT3-B	O	CH3 driver output
18	IN3''		CH3 gain adjustment pin
19	IN3'		CH3 gain adjustment pin
20	IN3	I	CH3 input
21,22	VCC		VCC
23	IN4	I	CH4 input
24	IN4'		CH4 gain adjustment pin
25	IN4''		CH4 gain adjustment pin
26	OUT4-B	O	CH4 driver output
27	OUT4-A	O	CH4 driver output
28	GND		GND

*PCA82C250T



*S-80763ANJT

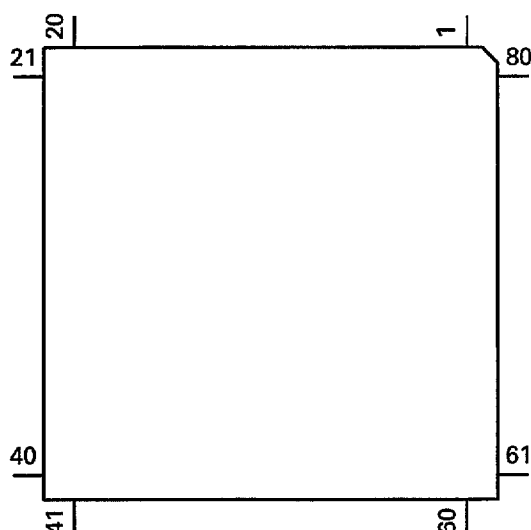


● Pin Functions(PD4631A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	MOD	I		Destination sense analog input
2	RSL	I		Sub tuner signal level analog input
3	RSD	I		Sub tuner station detector input
4	AVSS			A/D GND
5	ILLCON	O	C	Illumination power analog output
6	DINJ	O	C	Disc set indicator control output
7	AVREF1			(D/A converter standard voltage)
8	PDI	I		PLL data input
9	PDO	O	C	PLL data output
10	PCK	O	C	PLL clock output
11	RDI	I		Serial data input for RDS IC
12	RDO	O	C	Serial data output for RDS IC
13	RCK	O	C	Serial clock output for RDS IC
14	BSRQ	I		P-BUS serial pole request input
15	BRXEN	I/O	/C	P-BUS reception enable input/output pin
16	BRST/TSI	O	C	P-BUS reset output
17	BSIO/TSO	I/O	/C	P-BUS serial data input/output
18	BSCK/TCK	I/O	/C	P-BUS serial clock input/output
19-26	D0-7	I/O	/C	Address/data
27	A8	O	C	Address
28	CS	I		CAN BUS chip select
29	RST	O	C	CAN BUS IC reset
30-32	VOL1-3	I		Rotary encoder input
33	VSS			GND
34	MS	I		Cassette mechanism MS sense input
35	MTL	I		Cassette mechanism METAL detector input
36	LOAD	I		Cassette mechanism Loading detection input
37	POS	I		Cassette mechanism position sense input
38	RES	I		Cassette mechanism reverse end sense input
39	NES	I		Cassette mechanism normal end sense input
40	RD	O	C	Read signal input
41	WR	O	C	Write signal input
42	WAIT	I		Outside wait signal input
43	ASTB	O	C	Timing output for extension RAM
44	RPCE	O	C	RDS PLL chip enable
45	B.C/TUMUT	O	C	Tuner mute output/Dolby V output
46	TELON	O	C	Select output of outside input
47	SD	I		Station detector input
48	SMUT	O	C	Mute output
49	SYSPW	O	C	System power supply control output
50	AMPB	O	C	Amplifier power output
51	ECE	O	C	EEPROM enable output
52	ECK/VCK	O	C	EEPROM/E.VOL clock output
53	EDO/VDT	O	C	EEPROM/E.VOL data output
54	EDI	I		EEPROM data input
55	PCE/VST	O	C	PLL chip enable/E.VOL strobe output
56	NC			Not used
57	RRST	O	C	Reset output for RDS IC
58	RSEL	O	C	Select output for RDS IC
59	RRDY	I		Ready input from RDS IC
60	RESET	I		Reset input
61	INT	I		CAN BUS squeeze signal input
62	BSENS	I		Back up power sense input
63	IGSEN	I		ACC power sense input
64	POWER	I		CD +5V control
65	TELIN	I		Telephone mute input
66	CSEJ	I		Tape eject SW input

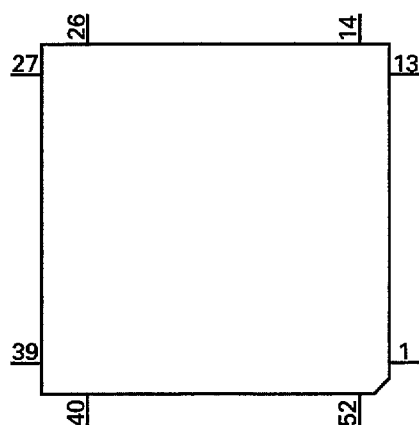
Pin No.	Pin Name	I/O	Format	Function and Operation
67	VOL0	I		Rotary encoder edge input
68	VDD			Power supply
69	X2			Crystal oscillator connection pin
70	X1			Crystal oscillator connection pin
71	IC			GND
72	XT2			Sub clock
73	TESTIN	I		Test program mode input
74	AVDD			Positive power supply terminal for analog circuit
75	AVREF0			GND
76	SL	I		Signal level input
77	BASS	I		A/D converter input from BASS volume
78	TRE	I		A/D converter input from TREBLE volume
79	BAL	I		A/D converter input from BALANCE volume
80	FAD	I		A/D converter input from FADER volume

*PD4631A

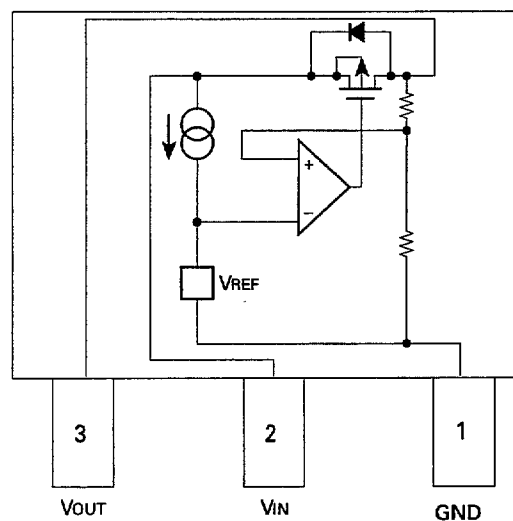


Format	Meaning
C	C MOS

*GGC1191(UPC72005GC(A))



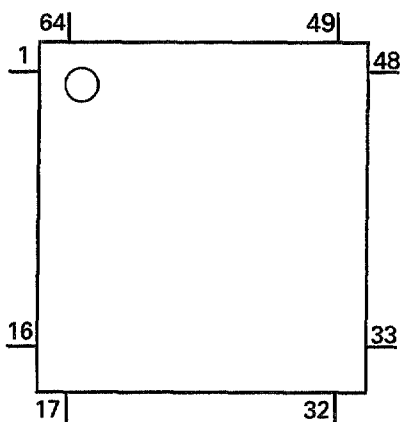
*S-81250PGPD



● Pin Functions GGC1191(UPC72005GC(A))

Pin No.	Pin Name	I/O	Function and Operation
1	RX1	I	Input data of CAN BUS
2	RX0	I	Input data of CAN BUS
3	AVSS		A/D GND
4	AVDD		Positive power supply terminal for analog circuit
5	TX1	O	Output data of CAN BUS
6	TX0	O	Output data of CAN BUS
7	VSS		GND
8	VDD		Power supply
9	BSSEL	I	Select port for inter face
10	WAIT	O	Memory access WAIT signal
11	ASTB	I	Memory access address T signal
12	RD	O	Memory access WAIT signal
13	WR	O	Memory access WAIT signal
14	CS	I	Memory access chip select pin
15	A8	I	Address line bit 8
16-23	D7-0	I/O	Address data bit 7
24-27	KDT0-3	I	Key data input
28-31	KST0-3	O	Key strobe output
32	VDD		Power supply
33	VSS		GND
34	F/R	O	Cassette mechanism head forward/reverse select output
35	PLAY	O	Tape MS filter select output
36	NR	O	NR output
37	SC2	O	Cassette mechanism sub motor control output
38	SC1	O	Cassette mechanism sub motor control output
39	CM	O	Cassette mechanism capstan motor control output
40	STBY	I	Stand-by input terminal
41	WKUP	O	BUS wake up output
42	INT	O	Squeeze signal output
43	IC		GND
44	RESET	I	Reset input
45	VDD		Power supply
46	VSS		GND
47	X1		Crystal oscillator connection pin
48	X2		Crystal oscillator connection pin
49	CVSS		Clock VSS
50	CVDD		Clock VDD
51	REL	I	Cancellation port of stop mode
52	CKSEL	I	Master clock frequency select input

*PD4663A



● Pin Functions(PD4663A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	NC			Not used
2	XRST	O	C	CD LSI reset output
3-7	NC			Not used
8	CLAMP	I		Disc clamp sense input
9	VSS			GND
10	NC			Not used
11	EJET	O	C	Loading motor eject control output
12	LOAD	O	C	Loading motor load control output
13	CONT	O	C	Servo driver power supply control
14	NC			Not used
15	CDMUTE	O	C	CD mute output
16	NC			Not used
17	ADENA	O	C	A/D reference voltage output
18-23	NC			Not used
24	VSS			GND
25-30	NC			Not used
31	BRXEN	I/O	/C	P-BUS reception enable input/output
32	BSRQ	O	C	P-BUS serial pole request input
33	VDCON	O	C	VD control output
34	CD5VON	O	C	CD +5V power supply control output
35	RESET	I		Reset input
36	TXARJ	I		Set up of TX output select input
37	EJSW	I		Eject switch input
38	BREST	I		P-BUS reset input
39	CMPAPI	I		Compression select input
40	VDD			Power supply
41	X2			Crystal oscillator connection pin
42	X1			Crystal oscillator connection pin
43	IC			GND
44	NC			Not used
45	TESTIN	I		Test program mode input
46	AVSS	I		A/D GND
47	TEMP	I		Temperature detector input
48	VDSNS	I		Over voltage sense input
49	EJTD	I		Disc EJECT position detect input
50	DINC	I		Disc detect input
51	NC			Not used
52	FOK	I		FOK signal input
53	MIRR	I		MIRR detection signal input
54	LOCK	I		Spindle lock detector input
55	AVDD			Positive power supply terminal for analog circuit
56	AVREF	I		A/D converter reference voltage
57	XSO	I		LSI data input
58	XSI	O	C	LSI data output
59	XSCK	O	C	LSI clock output
60	XSTB	O	C	CD LSI strobe output
61	XA0	O	C	Control signal distinguishing data output
62	NC			Not used
63	BDATA	I/O	/C	P-BUS serial data input/output
64	BSCK	I/O	/C	P-BUS serial clock input/output

Format	Meaning
C	C MOS

7.2 DIAGNOSIS

7.2.1 DISASSEMBLY

● Removing the Case(not shown)

1. Insert and turn a flat screwdriver to remove the case.

● Removing the Grille Assy

1. Removing the four screws.
2. Removing the grille assy.

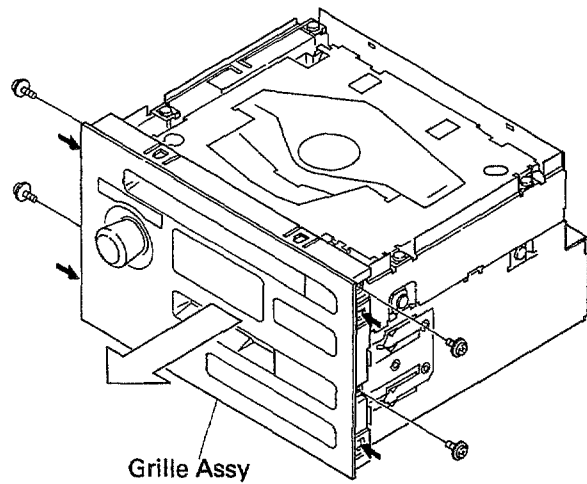


Fig.20

● Removing the CD Mechanism Module

1. Removing the four screws.
2. Disconnect the connector.
3. Removing the CD mechanism module.

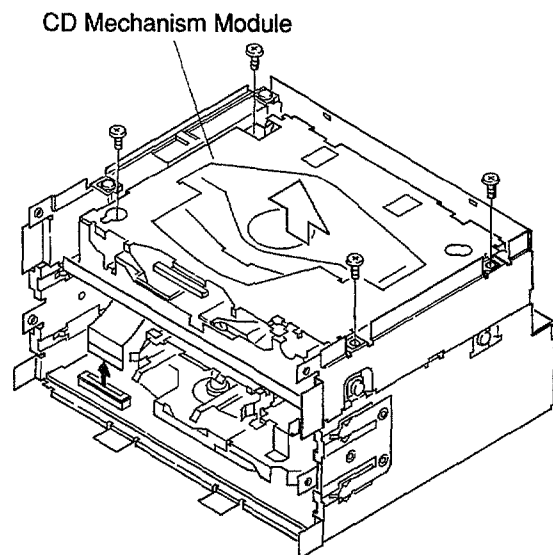


Fig.21

● Removing the Chassis Unit and Case

1. Removing the five screws.
2. Removing the chassis unit and case.

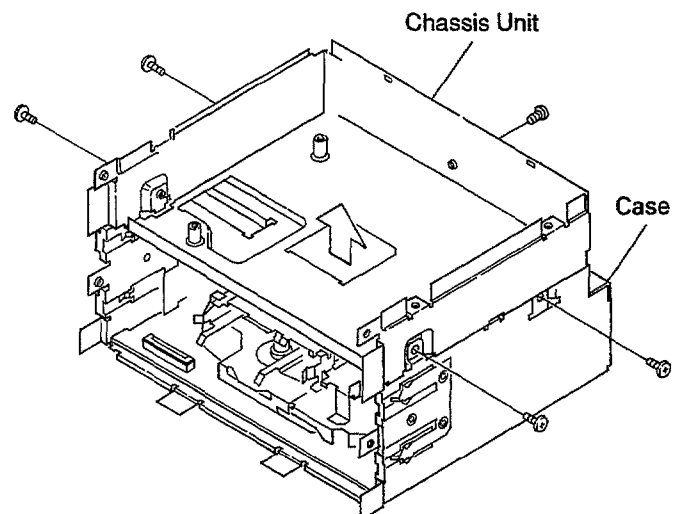


Fig.22

● Removing the Tuner Mother PCB and Connector PCB

1. Removing the seven screws.
2. Disconnect the connector and connector PCB.
3. Unbend the tabs at two locations indicated by arrows until straight.
4. Removing tuner mother PCB.

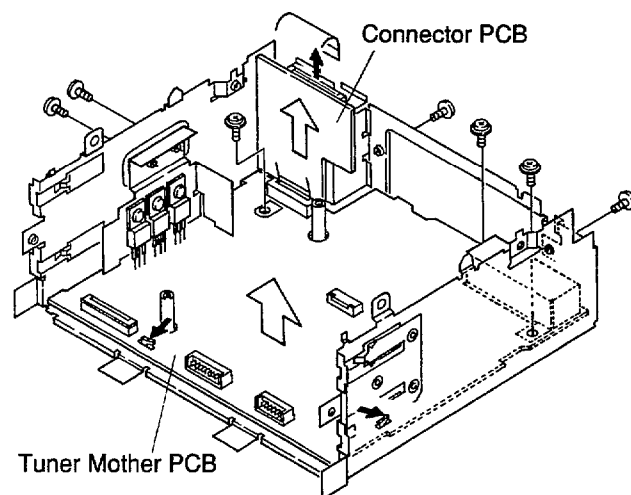
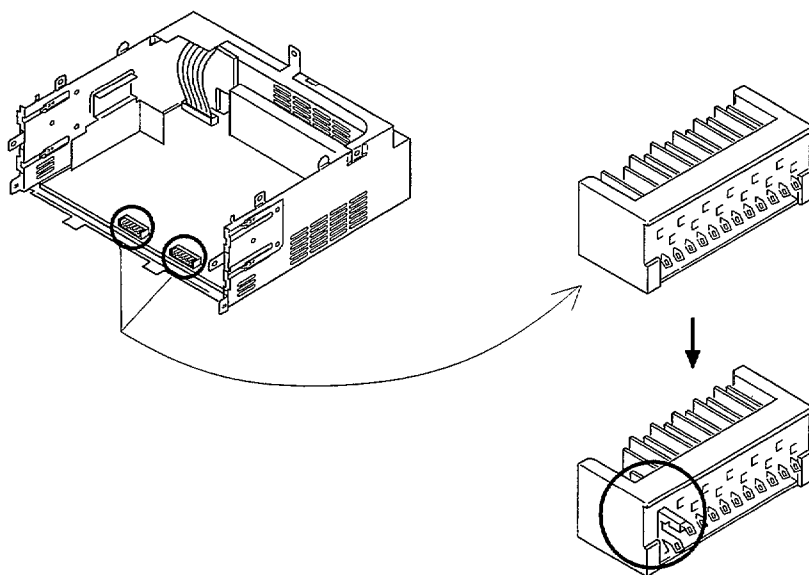


Fig.23

● Cautions on assembling

When mounting the grille assy on the chassis, be careful not to push tuner mother PCB connector pins. They might move to the rear side as shown in Fig.25 if the grille assy is mounted slantingly or forcibly. therefore, after mounting the grille assy, perform a visual check for the connector pins from the side chassis holes.



A few pins might be out of position.

Fig.24

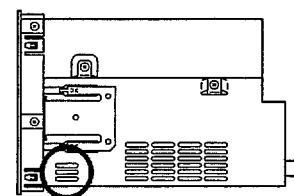


Fig.25

7.2.2 TEST MODE

● CD Test Mode

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential, therefore, is connected to REFO(approx. 2.5V) instead of GND.

If REFO and GND are connected to each other by mistake during adjustments, not only will it be impossible to measure the potential correctly, but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this, take special note of the following.

Do not connect the negative probe of the measuring equipment to REFO and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFO with the channel 2 negative probe connected to GND.

Since the frame of the measuring instrument is usually at the same potential as the negative probe, change the frame of the measuring instrument to floating status.

If by accident REFO comes in contact with GND, immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.
- Before proceeding to further adjustments and measurements after switching regulator ON, let the player run for about one minute to allow the circuits to stabilize.
- Since the protective systems in the units software are rendered inoperative in test mode, be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- Test mode cancellation
Switch ACC, back-up OFF.

- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit. Consequently, if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment, the following malfunctions may occur.

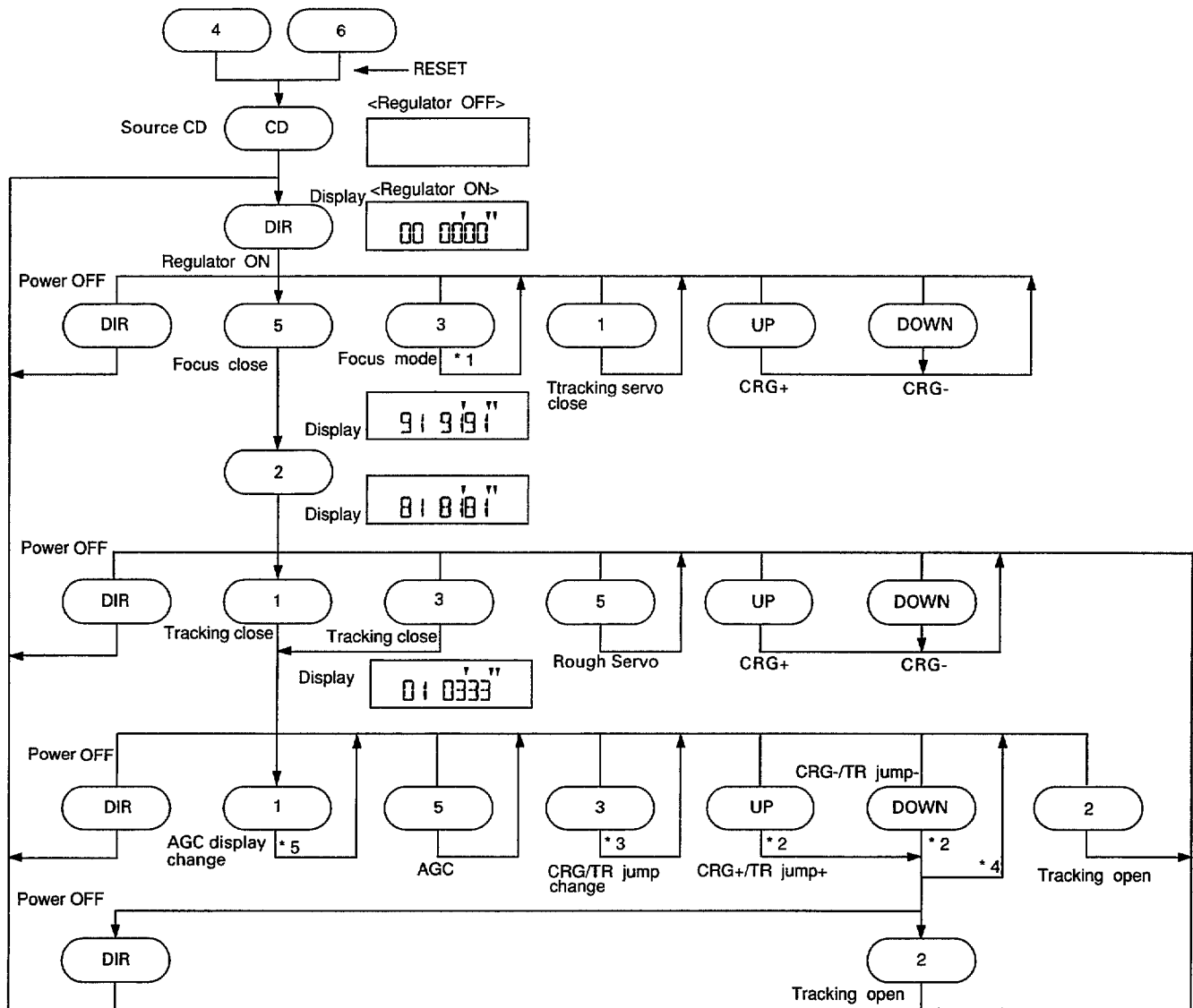
*During PLAY, even if the eject button is pressed, the disc will not be ejected and the unit will remain in the PLAY mode.

*The unit will not load a disc.

When the unit malfunctions this way, either reposition the light source, move the unit or cover the photo transistor.

- When loading and unloading discs during adjustment procedures, always wait for the disc to be properly clamped or ejected before pressing another key. Otherwise, there is a risk of the actuator being destroyed.
- Turn power off when pressing the button TR+ or the button TR- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)
- SINGLE/4TRK/10TRK/32TRK will continue to operate even after the key is released. Tracking is closed the moment C-MOVE is released.
- JUMP MODE resets to SINGLE as soon as power is switched OFF.

● Flow Chart(Single CD)



* 1 — Normal focus close 00 → S curve check 01 → Focus EQ check 02 —

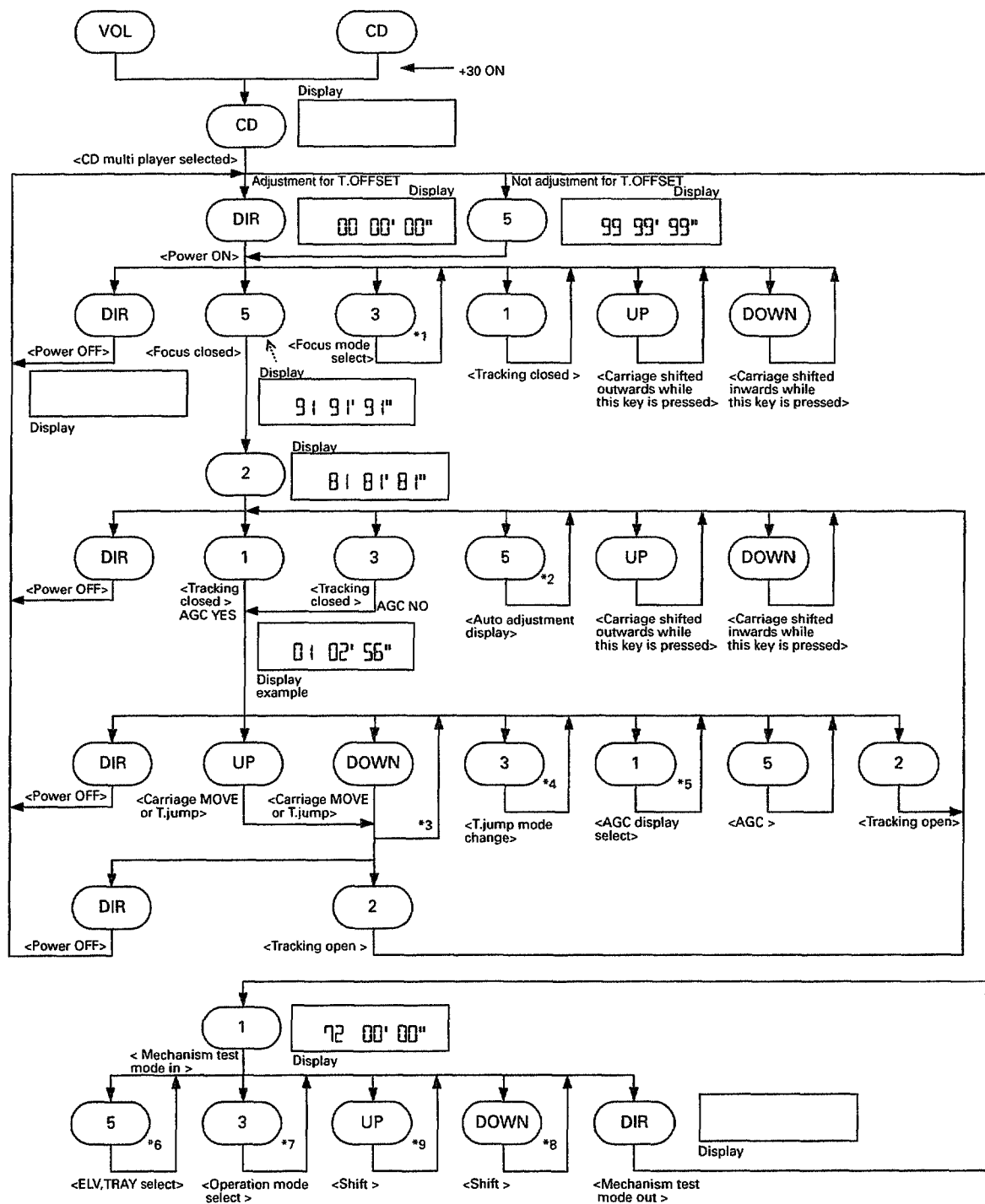
* 2 Single TR/4TR/10TR/32TR/100TR

* 3 — Single TR → 4TR → 10TR → 32TR → 100TR → CRG Move —
 Display 91 92 93 94 95 96

* 4 Only CRG Move, 100TRJump

* 5 — Min.Sec. or Track No. → F. AGC Gain → T.AGC Gain —

● Flow Chart(Multi CD)



- *1 Normal focus close → S curve check → Focus EQ check —
00 00' 00" Display 01 01' 01" 02 02' 02"

- *2 Normal display → Focus cancel → Tracking offset → Tracking balance ~
(Close spindle-rough)

- *3 100 TRK jump & carriage MOVE continue only while the keys are pressed

- *4 SINGLE → 4TRK → 10TRK → 32TRK → 100TRK → C.MOVE →
81 Display 82 83 84 85 86

- *5 Normal display → Focus gain → Tracking gain → Focus bias →

- *6 ELV motor select → TRAY motor select —
72 00' 0X" Display 72, 10' 0X"

- *7 ELV select: 8ms pulse drive → 24ms pulse drive → DC drive —
72 00' 00" Display 72 00' 01" 72 00' 02"

- TRAY select: 48ms pulse drive → 200ms pulse drive → DC drive —
72 10' 00" Display 72 10' 01" 72 10' 02"

- *8 ELV select : ELV down (Disc 1 to 6)
TRAY select : TRAY out

- *9 ELV select : ELV up (Disc 6 to 1)
TRAY select : TRAY in

● Error Number Indication

If the CD should fail to operate or if an error has taken place during operation the player will enter into the error mode, and the cause of the error will be numerically indicated.

This is aimed at assisting in analysis or repair.

(1) Examples of Display Err-XX

(2) Error Codes

Error Code	Classification	Description	Cause/Detail
10	ELECTRIC	Carriage home failure	Carriage doesn't move to or from the innermost position →Home switch failed and/or carriage immobile
11	ELECTRIC	Focus failure	Focus failed →Defects, disc upside-down, severe vibration
12	ELECTRIC	SETUP failure Subcode failure	Spindle failed to lock or subcode unreadable →Spindle defective, defect, severe vibration
14	ELECTRIC	Mirror failure	Unrecorded CD-R The disc is upside-down, defects, vibration
17	ELECTRIC	Set up failure	AGC protect failed →Defects, disc upside-down, severe vibration
19	ELECTRIC	Set up failure	Tracking error waveform is too unbalanced (>50%) or level is too small →The P.U.unit or tracking error circuitry is N.G.
30	ELECTRIC	Search time out	Failed to reach target address →Carriage/tracking defective and/or defects
A0	SYSTEM	Power failure	Power overvoltage or short circuit detected →Switching transistor defective and/or power abnormal
A1	SYSTEM	Mechanism power failure	Mechanism elevation reference voltage is out of prescription →EREF adjustment VR and/or power abnormal
50	MECHANISM	An error upon ejection	MAG switch release time has time out Elevation time out when eject
60	MECHANISM	An error while putting in and out the tray	Tray in / out time has time out Tray is caught when put in
70	MECHANISM	An error upon elevation	Elevation time has time out
80	MECHANISM	An error with an empty magazine inserted	No disc is available

* Setup means a series of operations after focusing up to sound output.

A1,50,60,70,80 : error code of multi CD



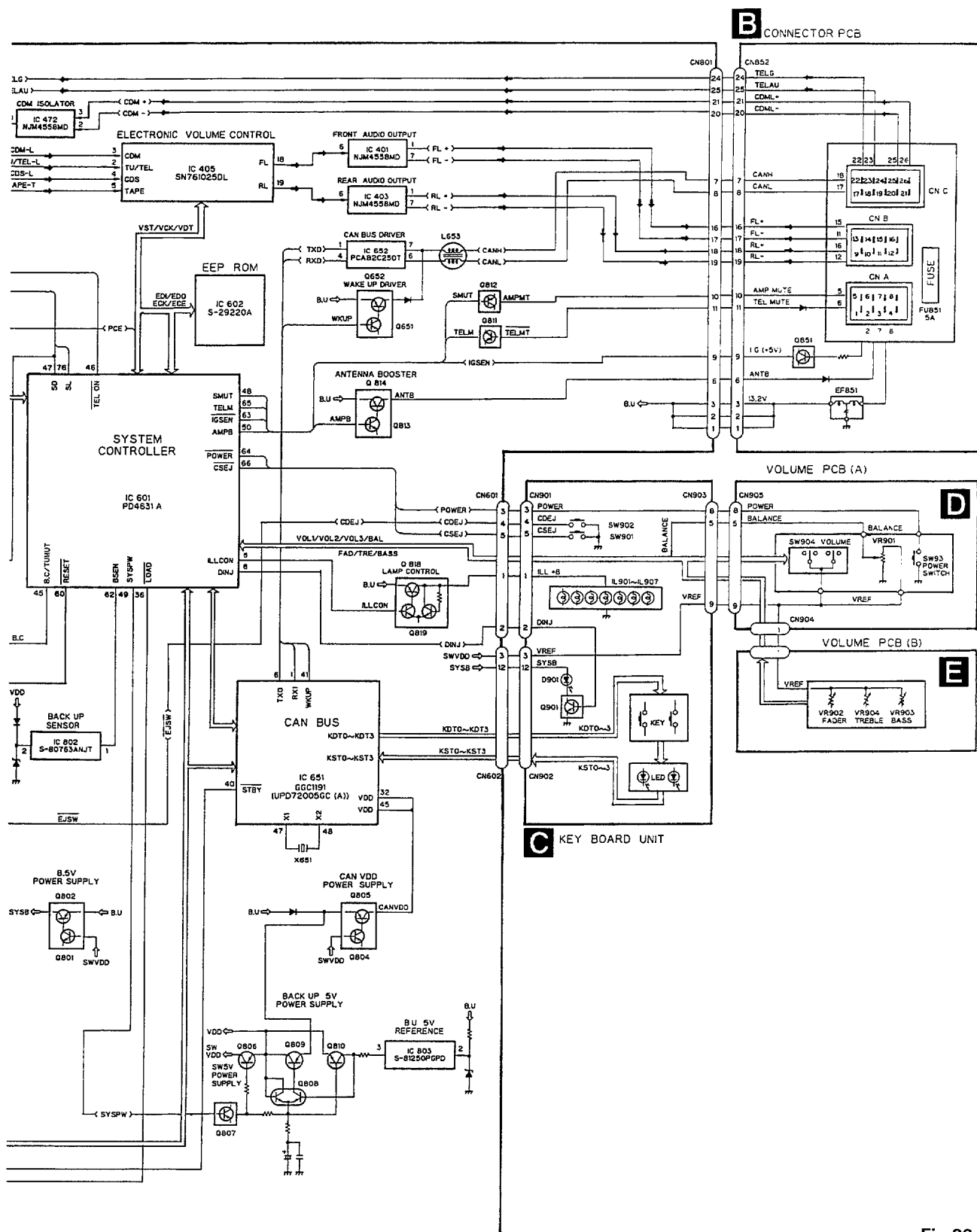


Fig.26

7.3.2 SYSTEM

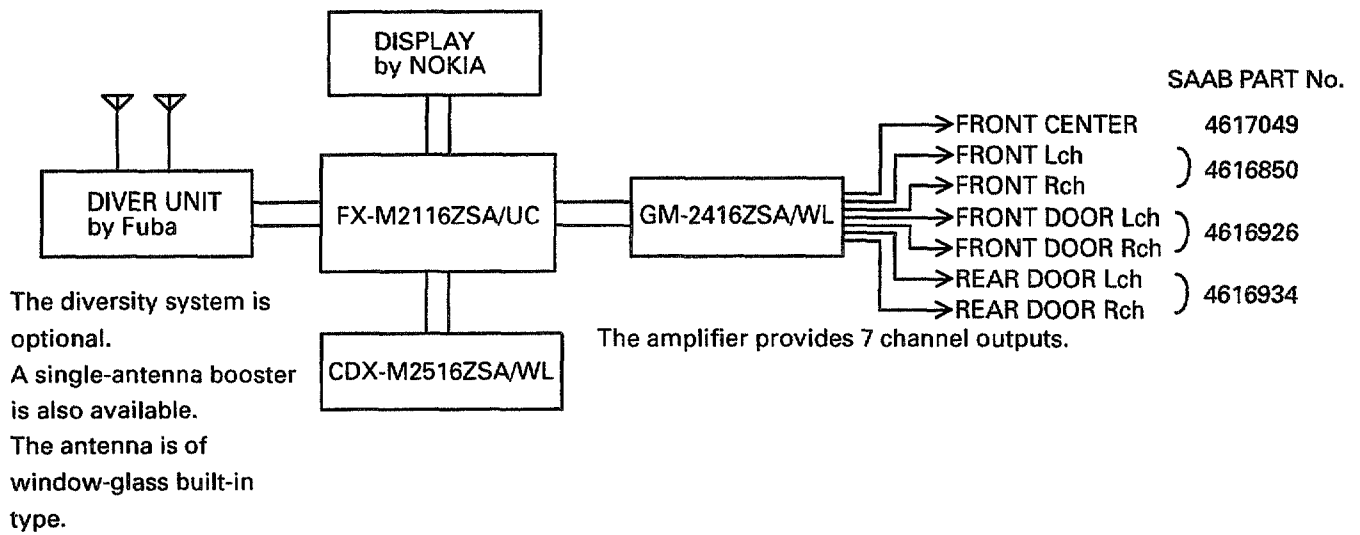


Fig.27

7.3.3 JIG

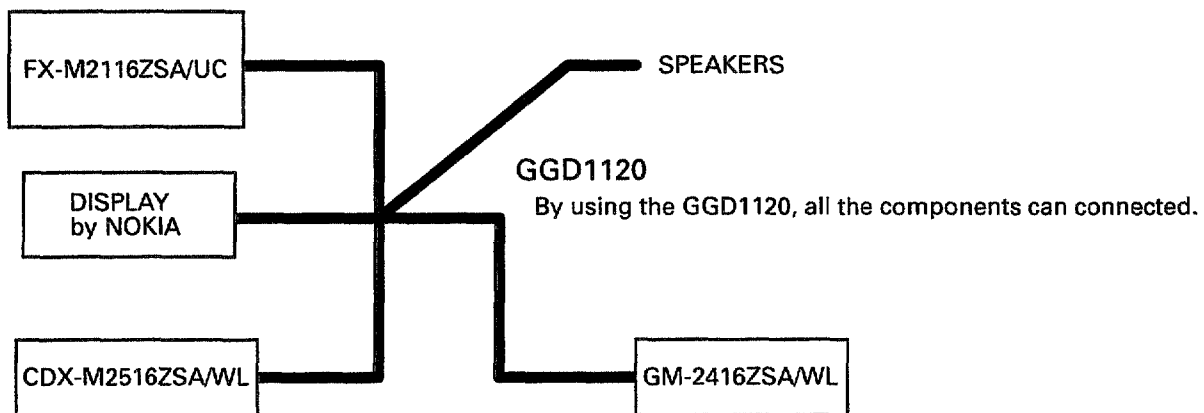


Fig.28

8. OPERATIONS AND SPECIFICATIONS

8.1 OPERATIONS

● TAPE

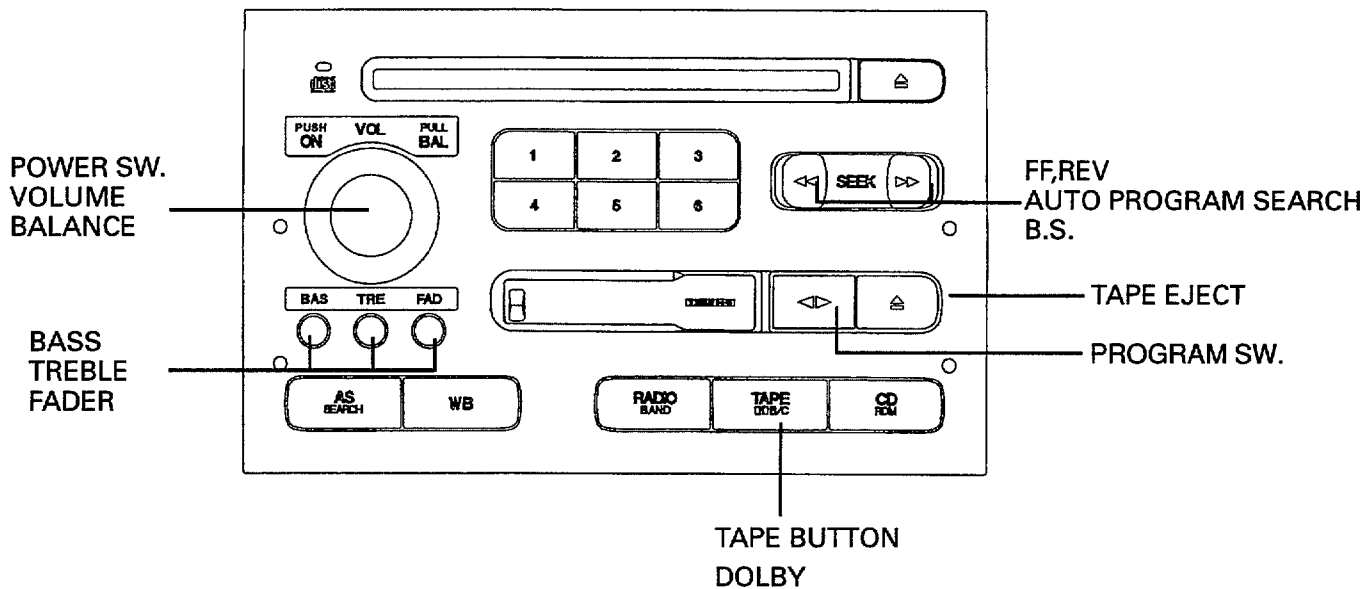


Fig.29

● RADIO

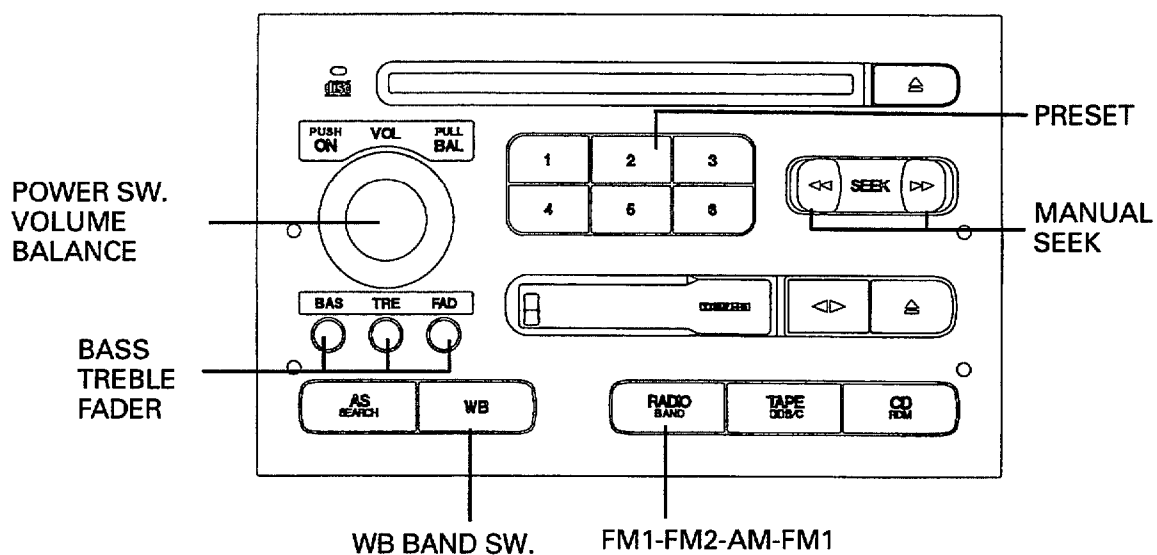


Fig.30

● CD

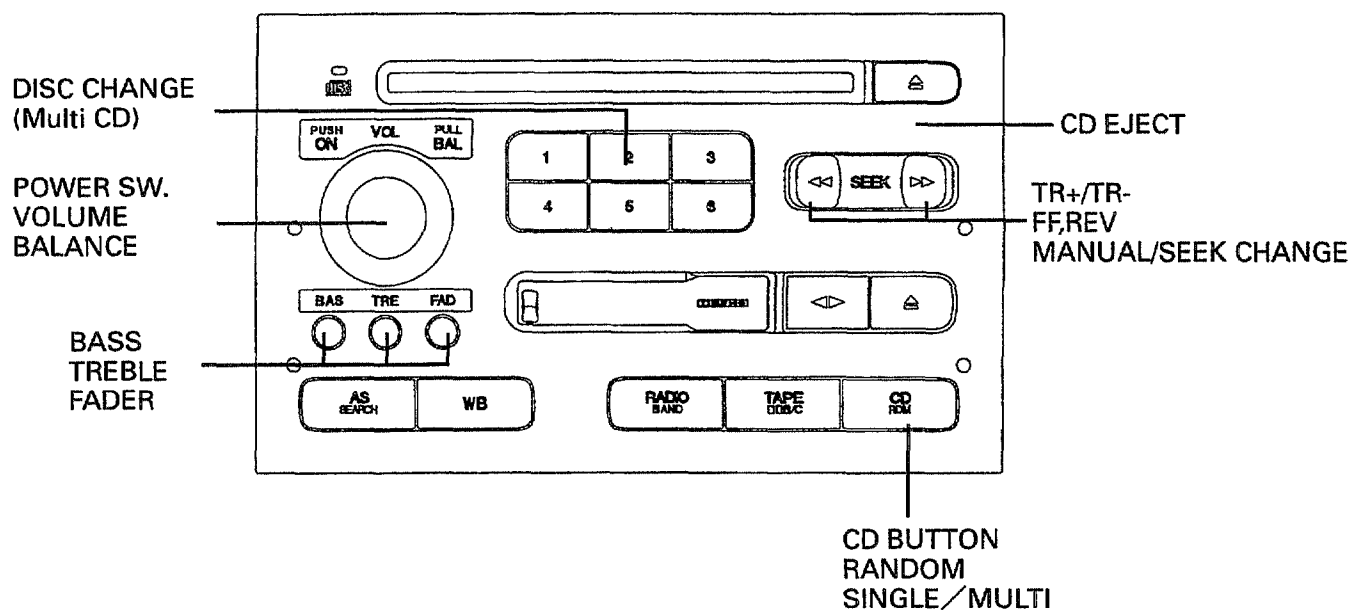
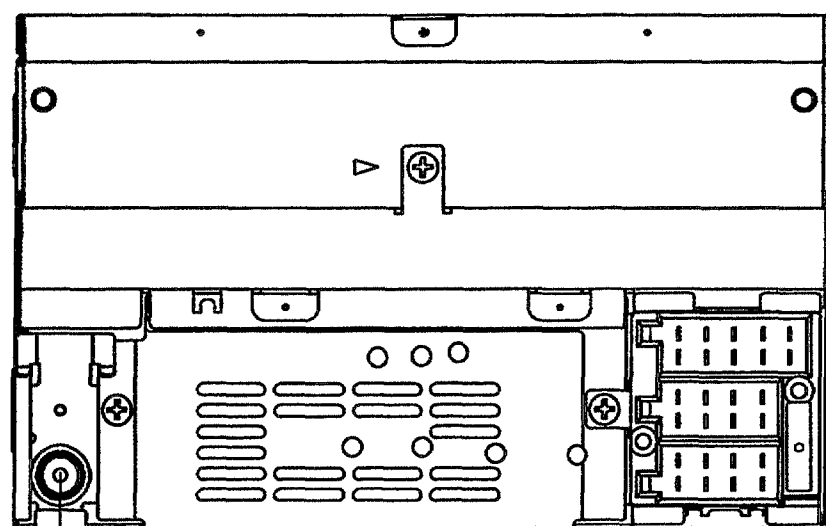


Fig.31

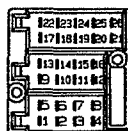
8.2 CONNECTOR



ANTENNA

① ISO CONNECTOR

CONNECTOR PIN LOCATION



Power supply, control input (level 3)
 pin 1 NC
 pin 2 +12V ignition voltage (+B)
 pin 3 NC
 pin 4 chassis ground
 pin 5 Amplifier mute
 pin 6 Telephone-mute control input
 pin 7 +12V antenna remote
 pin 8 +12V battery voltage (+30)

Speaker output (level 2)

pin 9 RR ground
 pin 10 FR ground
 pin 11 FL ground
 pin 12 RL ground
 pin 13 RR signal
 pin 14 FR signal
 pin 15 FL signal
 pin 16 RL signal

Databus, CD-input (level 1)

pin 17 EBUS data-line wire 1 (low)
 pin 18 EBUS data-line wire 2 (high)
 pin 19 NC
 pin 20 CD audio ground right
 pin 21 CD audio input signal right
 pin 22 Telephone ground
 pin 23 Telephone audio input signal (mono)
 pin 24 CD audio ground
 pin 25 CD audio ground left
 pin 26 CD audio input signal left

Fig.32

8.3 SPECIFICATIONS

Power source 13.5V±0.1V
Grounding system.....Negative type
Dimensions 195.6(W)×118.2(H)×183.5(D)mm
Weight 2300g

AUDIO

Tone control

Tone charact bass	±9dB
Tone charact treble	±9dB
Fader charact.....	-30dB or less
Balance charact.....	-30dB or less

CD

System	Compact disc audio system
Usable discs	Compact disc
Signal	Sampling frequency:44.1kHz Number of quantization bits:16;linear
S/N	80dB or more
Distortion	0.03% or less
Separation	70dB or more

TAPE

Tape	Compact cassette tape(C30-C90)
Tape speed	4.76 cm/sec.(+0.14 cm/sec.,-0.05 cm/sec.)
Crosstalk	40dB or less
Separation	35dB or more
S/N	45dB or more
Distortion	2% or less

FM TUNER

Frequency	78.9-107.9 MHz
Usable sensitivity	9dBf
S/N	50dB or more
Distortion	1.0% or less
Separation	25dB or more

AM TUNER

Frequency.....	530-1710 kHz
Selectivity.....	45dB or more(± 9 kHz)
S/N.....	45dB or more
Distortion.....	1.0% or less